ROAD and TRACK

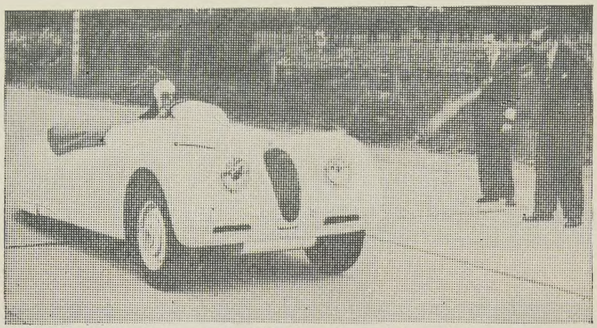
35c

CTOBER, 1951

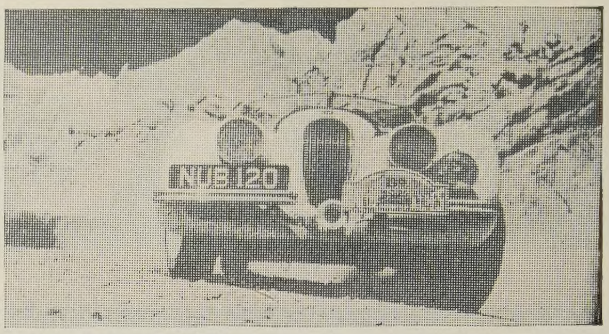
2.9 ALFA ROMEO SEE PAGE 20 PHOTO BY CHESEBROUGH

The Motor Enthusiasts' Magazine

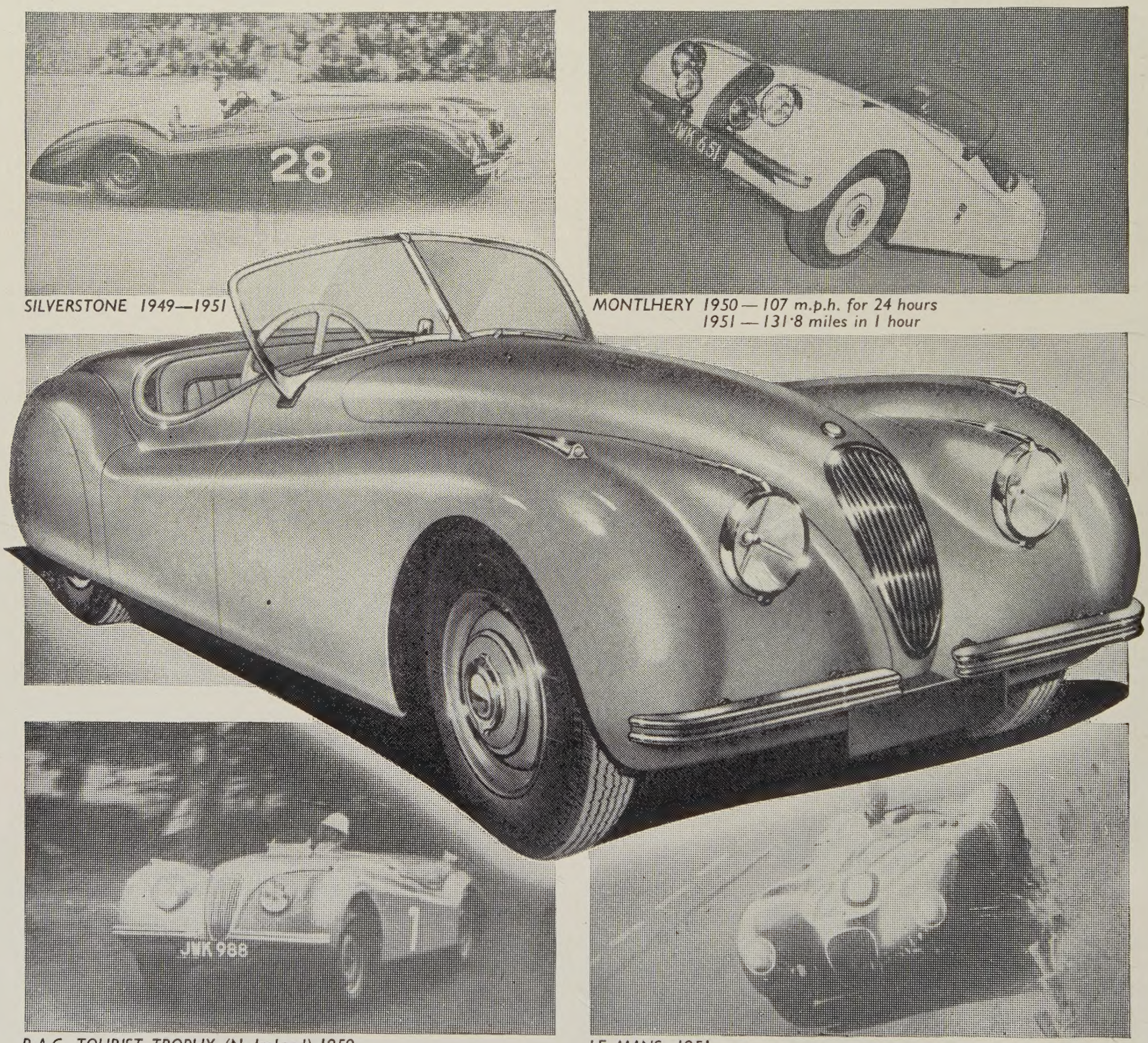
SOME OUTSTANDING VICTORIES AND ACHIEVEMENTS



JABBEKE (BELGIUM) 1949 (132·6 m.p.h.— flying mile)



ALPINE TRIAL, 1950-1951



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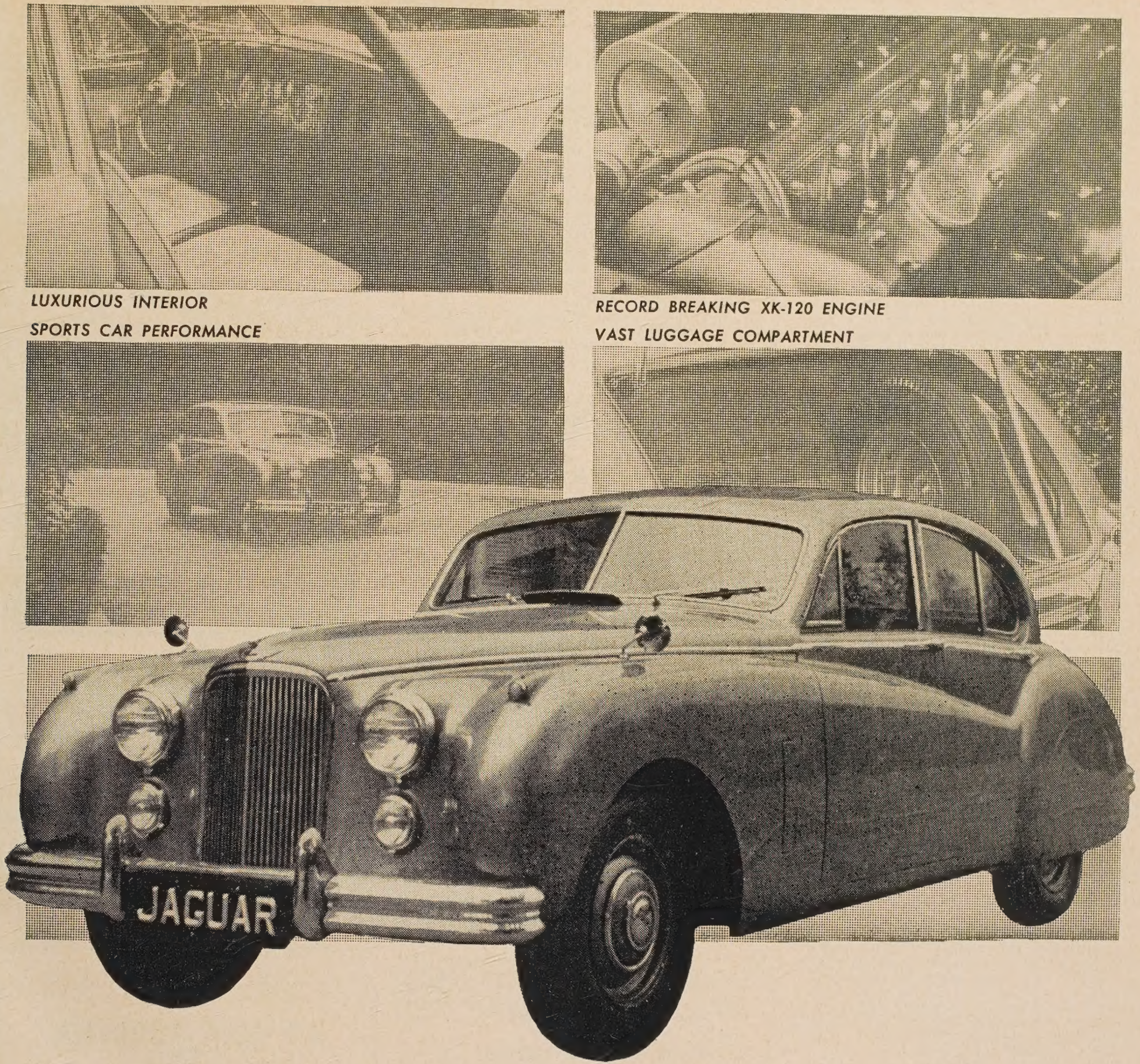

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UNSPEAKABLE SCABROUS ANOMALIES

In every sport, both amateur and professional, there are certain unspeakable scabrous anomilies which no conscientious enthusiast ever hints at, for decorum's sake. Sports car racing is no exception. Even so, amid the huzzahs which have greeted Barlow's Simca, I cannot but inquire:

(a) Will it hold two full-size men?
(b) Can it carry a little baggage and a spare tire?
(c) Does it have stowable top, screens and windshield with wiper?
(d) Can it be fitted with bumpers and legal lights?

Having thus offended the pudicity of every decent Southern Californian, I must point out that I have nothing against Mr. Barlow's exquisite little beauty; I merely seized upon it as a definite specimen of the 'headless dropheads" that seem to have become endemic among amateur builders. These talented engineer-sportsmen deserve everyone's respect, but why do they not fit their splendid machines with honest monoposto bodies, and have faster, safer races among themselves?

Detroit, Michigan — Donald Scott

Barlow's Simca can carry two big men, it does carry a spare tire, and a very small amount of baggage could be taken on. Top, screens, wiper and bumpers can be fitted. Car is licensed. Even so, I agree as to monoposto bodies for specials.—Ed.

AUSTIN A-40 HOP UP DISPUTE

Let reader H. M. Manning measure the next A-40 he hops up, before disputing head capacity.

The stock head capacity of 36 cc is correct for the method of measurement advocated. The compressed gasket thickness of .046″ has a volume of 5 cc and the unswept volume of the cylinder (the piston doesn't come to the top of the block!) accounts for the other 7.4 cc, making a total unswept volume of 48.4 cc. This of course results in 7.2:1 compression ratio.

The area of the head cavity is 4.83 sq. in. (the gasket area is 6.55 sq. in.) which requires the removal of about .036″ for each 2.9 cc decrease or .4 compression ratio increase. Mr. Manning's 8.5:1 would require the removal of about .105″ from the head which seems somewhat excessive and undoubtedly would require shorter push rods. The possibility of valve interference at full lift would have to be investigated also.

Northport, N. Y. — W. D. Craig, Jr.

BOLIDE

With reference to your snooty footnote under Huntoon's report from LeMans, I would suggest "Larousse" as a better source of the meaning of "bolide", or perhaps, as the word is a "gallicisme", the pages of Equippe, the sporting newspaper. We enclose for your edification of another sporting newspaper LeMaine. The word "bolide" has been circled in red.

"Le bolide est sur cales. . ."

Webster is too stuffy. Of course, we effete Easterners have gotten in the habit of using the word as slang in English, viz: Huntoon. . . but then Webster never raced, so we must excuse him.

Everglades, Florida — Alf Romeo

A thousand pardons, we Westerners are too busy being prolific to study French. . . . Webster is ruled off the track—Ed.

LE SABRE AGAIN

In defense of "Le Sabre". . . . .!! Gad!

Mawhinney is a designer, . . . not a driver! . . . He thinks in the future . . . of cars without a steering wheel . . . just put a plug into your ears and when the car is doing 190 mph you think it should turn right (or left) and it does. . .

However, there are still a few people who love cars . . . because they are cars . . .!!

Have never known anyone (that was a car nut) that didn't like a big long snoot up in front and a short back end . . . and most of all . . . liked to know where his gears were! . . . "shifting" . . . is "fun" . . . for a guy who loves his car!!

All this boils down to—"let's keep sports cars . . . automobiles" and for the trade . . . let them have their sponge transmissions and 3 ft. overhang of tin . (after all it keeps the garage boys employed!)

My 1938-SS Jaguar . . . 135th car made in '38 . . . has a long snoot and will surprise most people who think she's old!

Norfolk, Virginia — Dexter S. Miller

LE SABRE FEATURES ON GM CARS

I do not believe that the Le Sabre or the Buick XP-300 were built to be true sports cars. They were built as experimental cars. Many of the features, I believe, you will see on the five General Motors cars in the future. That is why it has so many gadgets, fins, jet exhausts, etc. The amazing part of it is, while they are experimental cars for future standard production automobiles, they have many sport car characterists, such as good top speed, good cornering, low center of gravity, and so on.

Maybe Detroit has finally decided to give the American public something for its money. The Le Sabre and the XP-300 can never, and were never meant to compare with true sports cars, but G.M. has done a fine job of combining luxury with speed and safety.

LaJolla, Calif. — Terry Knoepp

AUSTRALIAN RACE "NEWY" TO AUSSIE

Could you enlighten me on something which has me very puzzled. Reading the description of the S.C.C.A.'s Thompson Connecticut, meeting, I noticed one of the contests was called the "Australian Pursuit Race." Could you please tell me just what that entails? I live in Australia but it's a "newy" on me!!!

N.S.W. Australia — V. E. Willing

In the "Australian Pursuit Race," cars are lined up single file for a rolling start. Any car passed must drop out, the remaining car being the victor. Some enterprising race promoter probably originated the title.—Ed.

SPORTS CARS ON TRAILERS

How many cars arrived at Pebble Beach and Palm Springs on trailers? If the road races are to be dominated by gutted, lightened race cars which only resemble sports cars then the sport will die again in this country.

In England, even "Trials Specials" are required to be driven to the trials from a minimum distance. Maybe we need something like that here.

Chicago, Illinois — Robert J. Gary

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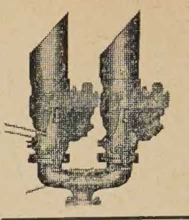

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ROAD and TRACK

The Motor Enthusiasts' Magazine

2ND ANNUAL MEXICAN ROAD RACE

The recent announcement that the "Carrera Panamericana Mexico" road race was to be held again this year was received with enthusiasm . . . last year's event having established itself as one of North America's *most* important events. Only in this race can the vastness of Italy's Mille Miglia be approached. It is ideally suited to the high speed, straight road characteristics of American cars . . . . and the rule admitting only sedans greatly favors the U.S. product. A more perfect high-speed proving ground could not be asked for.

The two mountainous stretches provide enough winding roads to thoroly test road-holding qualities . . . . and to give foreign entries a chance to gain time on their large-engined Yank cousins. The expected entry of several foreign car teams should enliven competition. Reversing the direction of the race (it now ends across the border from El Paso, Texas) is a real break for American spectator-enthusiasts.

A South American flavor has been introduced with the change of regulations to allow moderate "hop up" operations. This will be a big boost for our speed equipment manufacturers. Also to be praised are the modifications allowed in the interest of safety (very similar to NASCAR stock car practices).

Come on, Mr. American Automobile Manufacturer, be virile . . . . get off that cloud-fluff publicity dream . . . . get into the game by entering this great race. Give *proof* to your claims.

RECORDS

American National (racing, non-stock) and American Stock Car records continue to fall to British "invaders." The Austin A-90 at Indianapolis, and the Austin A-40 at Linden Airport started the run . . . . Goldie Gardner's streamlined MG and Ralph Stewart's Mark II MG at Bonneville added new marks which give the American record books a decidedly British accent.

The last record-breaking run by an American car (Hudson) was made in 1939 . . . . many of the existing records were established in 1928 . . . . a 23-year sleep. Surely our present crop of stock cars are capable of breaking the existing record . . . . cars like the V-8 Chrysler, Cadillac, Hudson Hornet, Packard, Lincoln and Nash, to name a few, are in the 98 to 102 mph bracket. Many of these cars showed their ability to maintain these speeds for long periods in the 1950 Carrera Panamericana Mexican road race. The existing marks range from 68.01 mph to 95.95 mph.

It's time the American manufacturers take this records business seriously.

RESULTS OF BARLOW'S SIMCA CONTEST

Announced in the July issue of *Road and Track*, this contest drew guesses ranging from 615 to 1,750 pounds. On certified scales, the weight was exactly 1,112 pounds, empty and dry.

The winner was Byron D. King of 534½ Acacia Ave., Whittier, California, whose guess was right on the button... he wins a 2 year subscription and 10 dollars.

October, 1951 Vol. 3, No. 3

CONTENTS

German G.P. 4
Elkhart Lake 6
Poets' Corner 9
You Saw Them In 10
MG Records 12
Building Your Own Sports Car 14
Salon—Alfa 17
    Gonzalez 18
    Alfa 20
    Borgward Hansa 1500 21
    Special 230 hp Alfa 22
Catalina 25
Steering Phenomena 26
Technical Correspondence 27
Humber Hawk 28
Cadillac-Ford Continental 32

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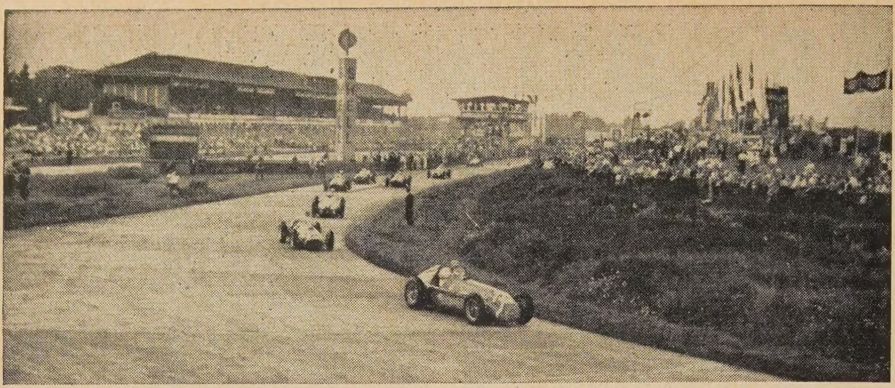
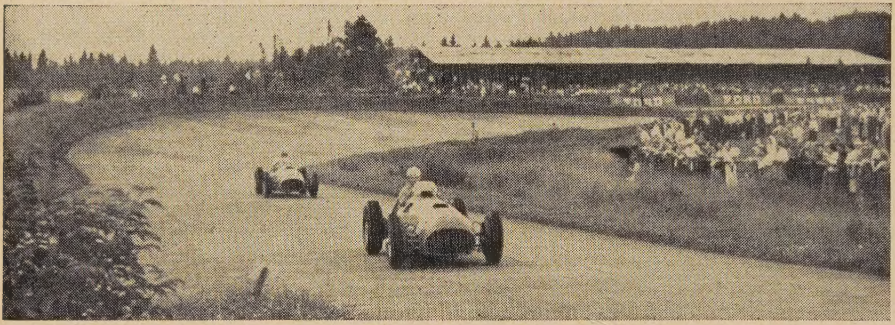


The famed Nurburgring, with 180 turns per lap, is one of the most difficult circuits in the world.



GERMAN GRAND PRIX

by Corrado Millanta

The Ferrari team was very calm before the race. In fact, the last day before the big event, Ascari, Villoresi, Gonzalez and Taruffi didn't practice at all! They were content with checking the times of the Alfa drivers. The *big* battle had taken place two days before, between Ascari and Fangio, and Ascari won. Fangio (on Alfa) tried. He jumped into his car and made off at a furious rate, trying to break Ascari's record. Luck was not with Fangio—he didn't break the record, tho a hedge held his car in safety after he spun out at the Adenau incline. He tried again but without success. The practice record remained to Ascari's Ferrari.

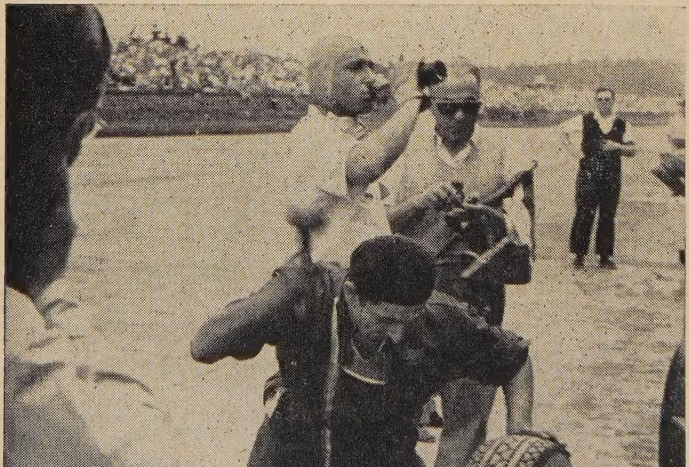
Unless something really exceptional happens at Monza or Barcelona, this German Grand Prix will be the most significant and interesting of the 1951 season. Unlike Silverstone, Monza and Rheims, Nurburg is up hill and down dale—thru sharp curves in forest so thick the drivers have difficulty in telling where they are. Some of the 180 curves in the 14.26 mile course are within a few feet of each other, making passing difficult. The wear on the cars is tremendous, because besides braking and accelerating there are grades as steep as 17%.

It is known that it is nearly impossible to memorize the track; however, the Alfa and Ferrari teams were on hand five days before the race, trying to study the complicated circuit. Some drivers put as much as three hundred miles on their own passenger cars before they even drove one lap in a race car. Nurburg has been rebuilt in certain spots since the war and these new stretches are highly dangerous, even to those familiar with the course.

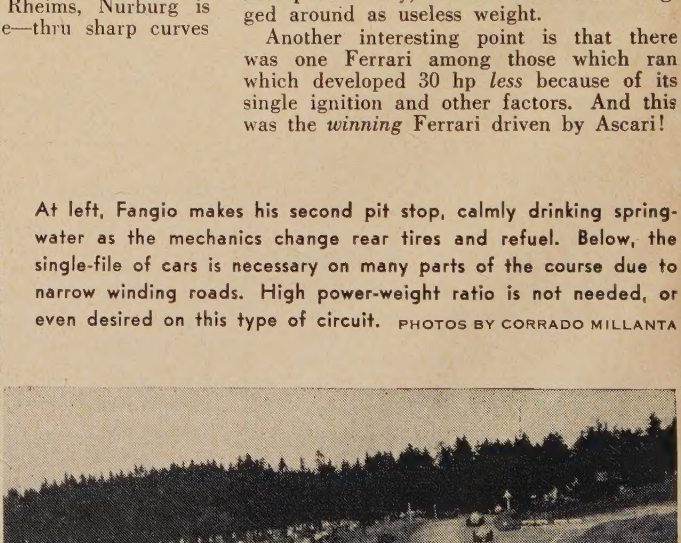
If we stop awhile after this G.P. to examine the situation, we must admit that gradually the unblown car has crept up on the blown and maybe even surpassed it. The record of this Nurburg Ring (82.58 mph) was set by Caracciola in 1937, driving a supercharged Mercedes, 5600 cc, which developed 550 hp and weighed (without tires) 1666 lbs. Now in 1951 Ascari has beaten this record with an *unblown* Ferrari of but 4500 cc and weighing (with driver) the same as the Mercedes! Yet the Ferrari developed only *350 hp.*

This remains a great puzzle. How is it that a car with decidedly inferior weight to horsepower ratio can be victorious? Some of the responsibility can be given to the superior roadholding of the new Ferrari. However, if we had a chart showing the time spent on the gas pedal by the drivers of the '37 Mercedes and the '51 Ferrari, we would have the secret. The Ferrari is doubtless more suited to this circuit. The Mercedes had more horsepower than the driver could use. The Ferrari allows the driver to use the gas pedal with less interruptions. The Mercedes developed a surplus of "passive horsepower" that can not be used on this particular course, at this particular time. In other words, in a race car, power should be utilized in the best posible way, and should not be dragged around as useless weight.

Another interesting point is that there was one Ferrari among those which ran which developed 30 hp *less* because of its single ignition and other factors. And this was the *winning* Ferrari driven by Ascari!



At left, Fangio makes his second pit stop, calmly drinking springwater as the mechanics change rear tires and refuel. Below, the single-file of cars is necessary on many parts of the course due to narrow winding roads. High power-weight ratio is not needed, or even desired on this type of circuit. PHOTOS BY CORRADO MILLANTA



Going back to the comparison between the Alfa and the Ferrari . . . since their first race (Geneva 1950) it is really remarkable, the constant improvement of the 4500 cc unblown engine. This year at Bern, the two antagonists were at practically the same level. Quite possibly Ferrari might have won at that time, except for Ascari's poor physical condition and the fact that his engine was not as efficient as those of his team mates, Villoresi and Taruffi. At any rate, Bern was the "last alarm" and the results at Silverstone (Ferrari victory) should have come as a surprise to no one.

Last winter Mr. Ferrari took great care of his engine. He not only obtained more horsepower (the Ferrari average today is 350 hp), and more speed in high gear, but he improved the power curve in low and medium ranges, and the combustion during acceleration. At this point the Ferrari has equal or even better acceleration than the Alfas and this was considered practically impossible a year ago—even by engineers.

I timed both cars on straight stretches at Nurburg and found Ascari and Fangio to be absolutely equal. So a great difference would seem to be in the road holding of the Ferrari, and also its better braking ability.

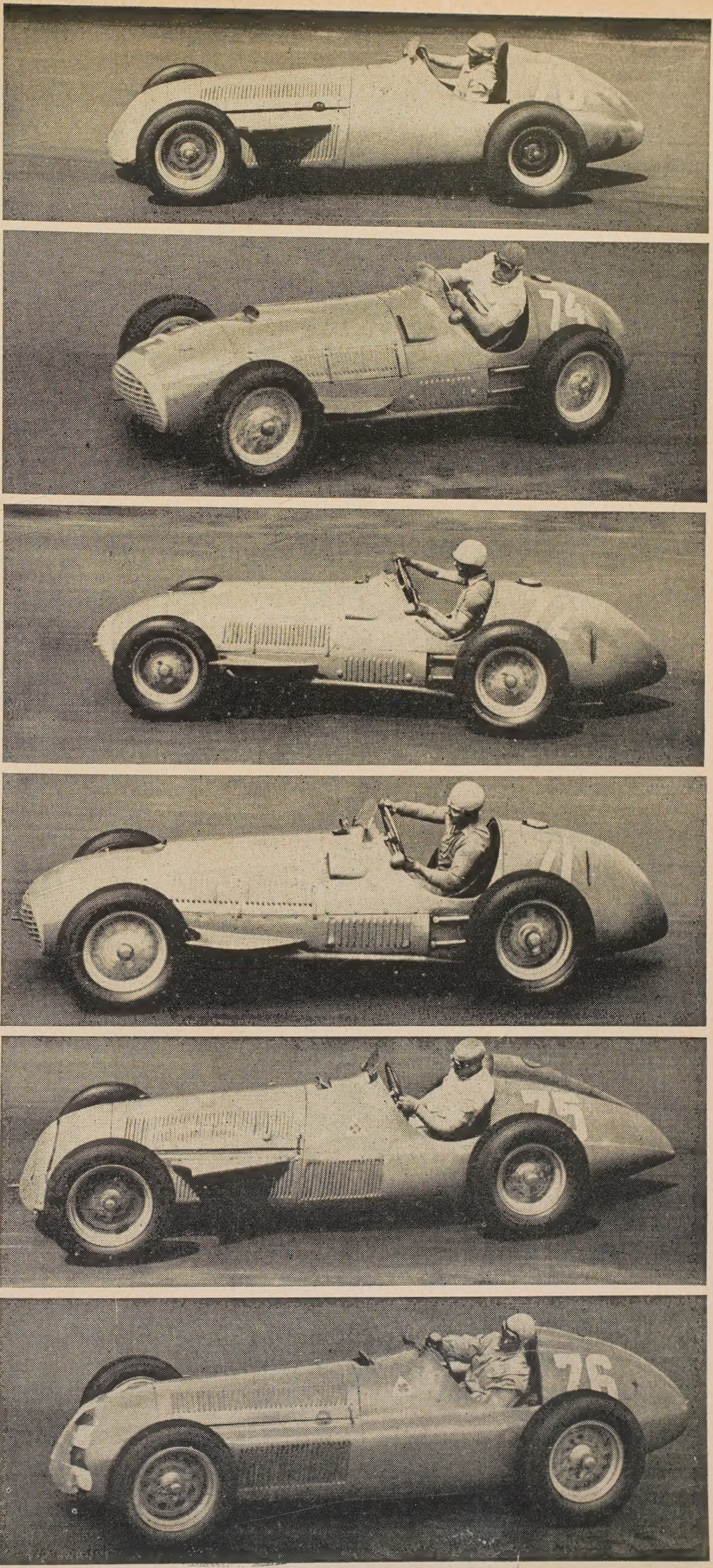
On top of this, the Ferrari is able to accelerate out of a curve far better because of the deDion rear suspension, and the Alfa is having trouble with weight distribution as compared to the Ferrari. Where the latter seems perfect in weight ratio, front and rear, the Alfa, with the addition of an extra gas tank has been thrown off its former balance. This extra fuel tank was added to eliminate pit stops for fuel, since it is known that the Ferrari, being unblown, can travel 270 miles without stopping. In spite of the fact that the Alfa has boosted its horsepower to 400/410 hp, the Ferrari is at this moment superior. All of the Ferraris finished in good condition (tho Taruffi's car was running on eleven cylinders at the end).

The uncertainty in the Alfa pits was proved when late in the day before the race, Chiron and Pietsch were allowed to make two laps of the Nurburg Ring. Such things, as far as I know, are generally done in the early qualifying days, considering the difficulty of the course and the fact that these drivers were not familiar with the Alfa. Anyway, Pietsch made a very good time—better than Sanesi. So Pietsch became the 4th Alfa driver.

And thus ends the most exciting chapter of the Grand Prix since the war. If Alfa will now pass to a strong counterattack at Monza, we shall see a further struggle and perhaps the laurel wreath will pass back to them. With BRM gradually getting in shape, the next race (Monza) should be the most exciting in racing history.

The actual race . . . Fangio reached the first curve ahead of everyone, followed by Ascari (Ferrari), Farina (Alfa), Gonzalez (Ferrari), Pietsch (Alfa), Villoresi (Ferrari), Taruffi (Ferrari), Bonetto (Alfa), and others. Fangio held first until the 5th lap, while Pietsch who was 5th at the start went off the course on the second lap and it took him ten minutes to get started again, which put him a lap behind the field. Later he made a short pit stop as a precaution, which put him even farther behind.

(Continued on page 36)



At right, from top to bottom: Pietsch (Allfa Romeo), Gonzales (Ferrari), Villoresi (Ferrari), Ascari (Ferrari), Fangio (Alfa Romeo), Farina (Alfa Romeo).

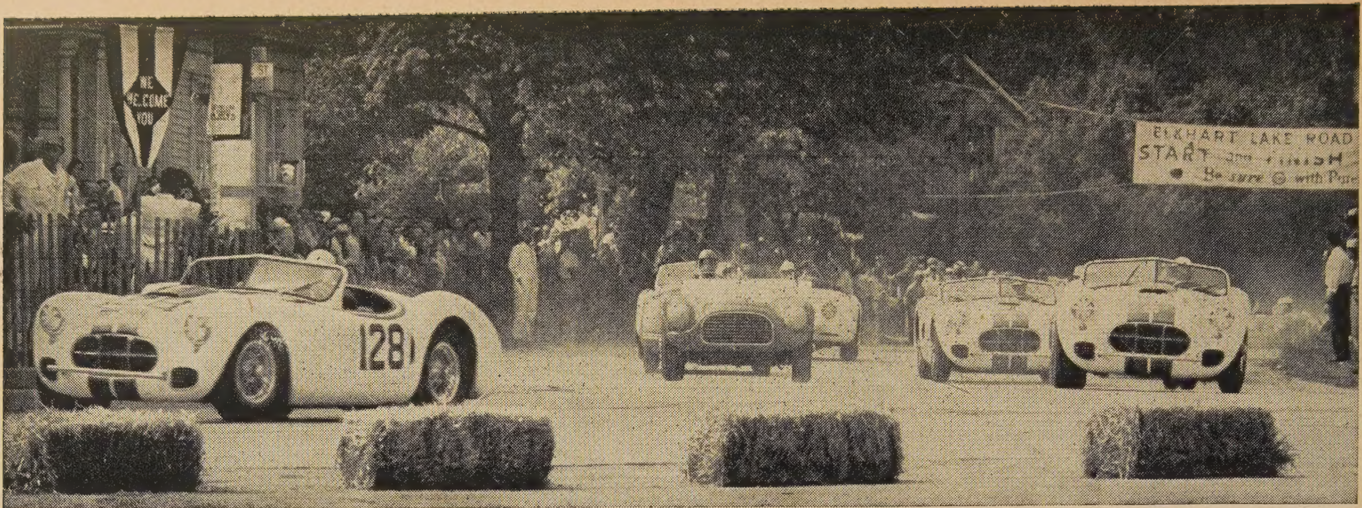


PHOTO BY MCCRAY

Above, the start. An impressive array of cars! Below, R & T's June cover drawing on billboard.

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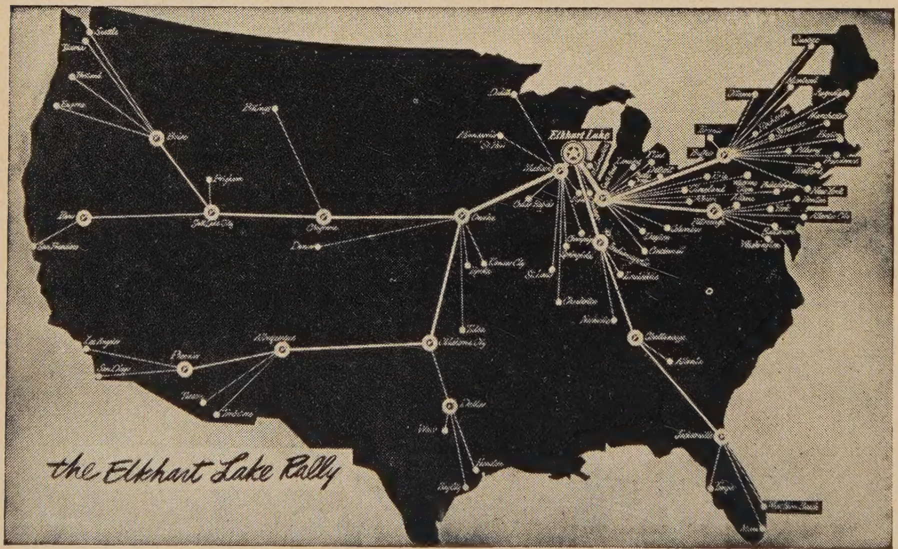


ELKHART

By Samuel Weill, Jr.

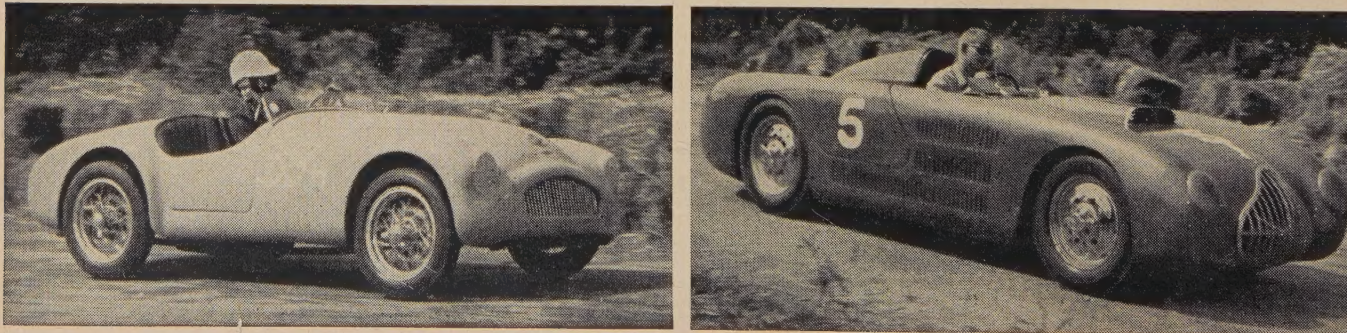
A decisive victory for the Cunningham sports car at Elkhart Lake proved that the pre-race optimism of the Cunningham team was not just wishful thinking. Winning the 202.5 mile grind at an average speed of 81 mph, John Fitch of Stamford, Conn. led all the way, with the exception of two laps, when his teammate, Phil Walters of West Palm Beach, Fla. in another (and identical) Cunningham was out front.

Coming in second after having driven a superb race, was Michael Graham of Los Angeles in J. E. Chapman's Cad-Allard. Mike on several occasions brushed the hay bales and once after touching hubs with Eddie Jones' Silverstone Healey proceeded down a straight rear-end first for several hundred feet at a spectacular clip. Controlling his car beautifully at this point he swung around and continued the race losing only a few seconds. (Later with great British understatement Mike told me "You know that horrible sound I heard must have been the result of my engine running forwards while my wheels were running backwards!)

Third in a Silverstone Jaguar was Phil Hill of Santa Monica Calif. who drove a smooth race from start to finish. For once his car (a new one for Phil) functioned perfectly, and there were no rearward trips down escape roads due to a shortage of gears or brakes.

Phil's teammate, George Malbrand, of Buenos Aires, also driving one of Charles Hornberg's Silverstone Jags, came in for a close fourth behind Phil after a very interesting exhibition of rapid touring! George, an experienced Grand Prix driver, possibly thought that his mount was a Grand Prix car, for at the beginning of the race, he threw it into the turns with great abandon and at terrific speeds. This resulted in a spectacular shower of hay at the Bank turn in the center of town, for he broadsided

Below, left, 850 pound Siata with Crosley engine. Right, the Veritas. Owner, Ralph Knudson.



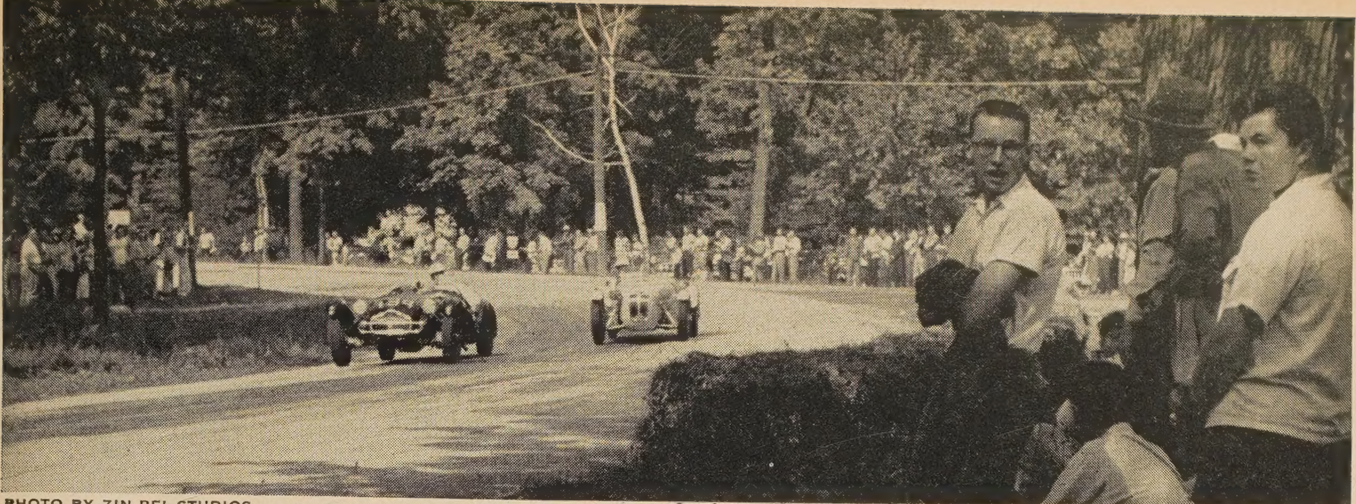


PHOTO BY ZIN-REI STUDIOS

LAKE

with verve into the largest pile of bales on the course, putting them hors-de-combat and bending his left front fender into the wheel. After a quick pit stop on the next lap to straighten the aluminum he began making up for lost time, and was soon again running just behind Hill, where he stayed thruout the remainder of the race.

Fifth spot went to Bill Spear of Southport, Conn. driving his 4.1 litre Ferrari, closely followed by Phil Walters in # 123, another Cunningham, in which he had taken over from Briggs Cunningham, earlier in the race. The third Cunningham was forced out in the 8th lap with a burned bearing.

Of the 38 cars that started, 17 went the whole distance, the remainder being flagged off as they came around.

In a pre-race prediction, this writer stated that despite the heavy appearance of the Cunningham, it was very probable that one of the team would come in front, as they handled beautifully. Briggs Cunningham gave me two good laps in his car the day before, and I was very favorably impressed. The car is rock-steady on turns, shows no tendency to break loose, and the acceleration has to be experienced to be believed. Since the course was not the world's smoothest, and none too wide, it seemed that this car was made to order for the circuit, a supposition which was apparently borne out the next day!

I was also given a hot ride in Phil Hill's Silverstone Jag by Don Parkinson, and the difference between these models and the stock XK's is astounding. The body is a shell integral with the four fenders, giving them a "Frenched" look, and with the Rudge-Whitworth wire wheels and enormous gas filler cap this model Jag is one of the prettiest and most potent cars around.

The sportsmanship shown by the drivers, and their good driving was in great contrast to early races, where many of the smaller cars failed to give right of way to the heavier and faster ones. The race was highly competitive all the way thru, with none of the "Touring" noted at other courses having been evident. Barlow, driving his SIMCA, Hector Scheffer in a new and very sleek Siata, and Bob Gillespie sped around the course for nearly half the race in that order, tail to radiator. Sherwood Johnston driving an XK and Ted Boynton in his beautifully clean Frazer-Nash also furnished a great exhibition of "dueling."

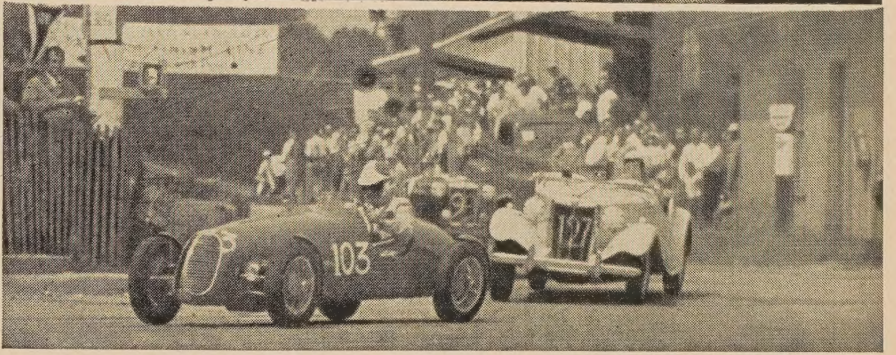


PHOTO BY EDWARD J COFFEY

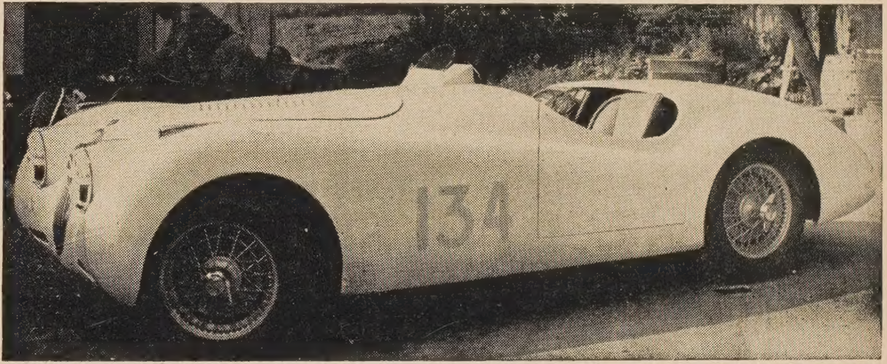


PHOTO BY ZIN-REI STUDIOS

Results of Main Race, Elkhart Lake, Wisconsin, August 26, 1951

Pos.	Car #	Class	Car	Driver	Elapsed Time	MPH	Pos. in Class 2	3	4	6
1	128	2	Cunningham	John Fitch, White Plains, N.Y.	150:20	80.82	1			
2	63	2	Cadillac-Allard	Mike Graham, Los Angeles, Calif.	151:18	80.30	2			
3	134	3	XK-120 Special	Phil Hill, Santa Monica, Calif.	153:07	70.35		1		
4	135	3	XK-120 Special	Pedro Malbrand, B.A., Argentina	153:13	79.30		2		
5	132	2	Ferrari "America"	Bill Spear, Southport, Conn.	154:38	78.57	3			
6	123	2	Cunningham	Briggs Cunningham, Palm Beach, Fla.	155:20	78.22	4			
7	119	4	Ferrari	Steve Lansing, New York City	159:14	76.30			1	
8	7	4	Frazer Nash	C. T. Boynton, Lake Forest, Ill.	161:41	75.14			2	
9	74	3	Jaguar XK-120	Sherwood Johnston, Winchester, Mass.	164:50	73.71		3		
10	32	3	Jaguar XK-120	Karl Brocken, Milwaukee, Wisc.	165:23	73.46		4		
11	45	3	Jaguar XK-120	John Bentley, New York City	168:06	72.28		5		
12	64	4	Healey Silverstone	Eddie Jones, Minneapolis, Minn.	168:07	72.27			3	
13	62	6	Simca Special	Roger Barlow, Hollywood, Calif.	176:23	68.88				1
14	143	6	TC MG	R. G. Gillespie, Los Angeles, Calif.	180:23	67.35				2
15	99	6	TC MG	Herbert Jacues, Chicago, Ill.	180:50	67.19				3
16	42	6	Siata	Hector Scheffer, Park Ridge, Ill.	181:47	66.84				4
17	51	6	TD MG	Larry Whiting, Lake Geneva, Wisc.	181:57	66.80				5
18	28	6	TD MG	Wm. B. Lloyd, Greens Farms, Conn.	181:59	66.75				6
19	77	6	TC MG	Norman Carlson, Itasca, Ill.	29 laps flagged					7
20	47	6	Volkswagen Spl.	Kurt Hildebrand, Chicago, Ill.	27 laps flagged					8
21	22	2	Cadillac-Allard	Mike Abendroth, Tipton, Indiana	26 laps lost water					
22	94	6	Fitch O'Shea	Paul O'Shea, Watermill, Long Island	26 laps unknown					
23	104	6	TD MG	Bernard L. Kerner, Detroit, Mich.	25 laps unknown					
24	93	6	TC MG	Bud Seaverns, Lake Forest, Ill.	23 laps brakes and oil					
25	138	6	TC MG	Robt. W. Magenheimer, Indianapolis,	18 laps unknown					
26	39	6	Siata	Irving Otto Linton, Philadelphia, Pa.	17 laps engine tired (sic)					
27	67	6	Simca	John Gordon Bennett, England	15 laps burst oil line					
28	4	6	TC MG	Sid Dickens, Chicago, Ill.	13 laps oil pressure					
29	103	6	Fiat	Richard W. Gent, Cleveland, Ohio	13 laps oil pressure					
30	43	5	TD MG (s)	Guy W. Atkins, Greenvale, N. Y.	12 laps gasket					
31	2	2	Ferrari "America"	Jim Kimberly, Chicago, Ill.	11 laps clutch					
32	81	6	TD MG	Henry K. Szamota, Bayside, L. I.	11 laps rolled over					
33	174	2	Cunningham	Phil Walters, Manhasset, Long Island	8 laps bearing					
34	139	2	Mercury-Allard	Roy Scott, Dallas, Texas	5 laps fan belt					
35	37	6	Porsche	Edgardo Fronteras, Chicago, Ill.	4 laps unknown					
36	59	3	Altemus Special	Mr. Marsh, New York, N.Y.	2 laps ditched					
37	109	4	Lea Francis	Arthur Iselin, Jr., Geneva, N.Y.	2 laps unknown					
38	5	4	Veritas	Ralph Knudson, Milwaukee, Wisc.	2 laps clutch					
39	48	4	Healey Silverstone	Jim Simpson, Jr., Chicago, Ill.	1 lap damaged fender					

ALFA ROMEO MILAN, ITALY

LATE NEWS ITEMS

MEXICAN RACE BULLETIN

The following interpretations to rules have been received from the officials of the Carrera Panamericana Mexico:

1. The "capacity for four seats" language was used because removal of the rear seats will be allowed to make room for spare tires, etc. Every car must be, originally, a standard four-seat-or-more model, tho the rear seats may later be removed.
2. The Jaguar's optional camshafts are forbidden.
3. Definition of stock cars: 50 manufactured, 500 on order, and on sale to the public thru authorized dealers. This last provision bars "Police Fords" with Mercury engines.
4. Methanol-water injection is barred.
5. Mercury crankshafts in Fords are forbidden, altho standard cranks may be modified.

Changes permitted:

Raised compression. High-compression aluminum cylinder heads. Any change in intake and exhaust manifolds. Use of altitude compensators. Cylinders may be rebored. Larger valves may be installed, and valves and ports may be relieved. Ignition setup may be changed. Special crankshafts are forbidden, but modifications are permitted. Alteration of standard differential. Use of coolants. Larger radiator. Dual carburetors. Use of tachometer or rpm indicator. Lowering of center of gravity. Modification of shock absorbers. Use of strut-type shock absorbers. Use of anti-sway bars. Stiffened springs. Modification of brakes and clutch (which must be standard to begin with). Use of shoulder harness. Use of bucket seats. Installation of roll-over braces. Use of safety door fasteners. Use of safety hubs. Use of fine-mesh radiator screen. Removal of hub caps and rearwheel guards. Removal of rear seats, floor mats and upholstery. Use of any type of plastic or safety glass. Open exhaust during actual running of race. Installation of magneto.

Changes forbidden:

Use of special differential. Quick-change and locked rear ends if they involve substitution of rear-end units. Removal of bumpers, grille, trim or other exterior parts not listed above. Lowering of body, cutting away fenders, etc. Use of alcohol or any other special fuel.

COOPER RECORD ATTEMPTS

A beautifully streamlined Cooper is being prepared to attack International Class I and J records this October at Montlhery. Reminiscent of the famous Auto Union record-breaking cars, the Cooper has only 6¼ square feet of frontal area. A new two cylinder J.A.P. engine will be used in the 500 cc attempt.

ALFA WINS AT BARI

Juan Manuel Fangio won the Bari Grand Prix on an Alfa Romeo, defeating Gonzalez (Ferrari) and Taruffi (who drove the new 4 cylinder Ferrari 2 litre car). Fangio's average speed for the 225-mile race was 83.9 mph. Non-finishers were Villoresi and Ascari (Ferrari) and Farina (Alfa).

COMING EVENTS

21 October
Reno, Nevada: Road race sponsored by Reno Chamber of Commerce and sanctioned by Sports Car Club of America (Northern California Region). There will be three races:

VIRGINIA LAKE HANDICAP. A screaming 6-lap (2.5 miles each thru part of the town), novice event. Handicap, and take cover, gentlemen!

COMSTOCK CUP. 50-miler for Club entries and stock cars of MG size and smaller. Clubs are urged to enter a single or a team of two cars for very nice Club trophies. Very handsome stuff, these trophies. Comstock Cup for overall winner.

NEVADA CUP. 150 miles. Class winners. Club Trophies for cars larger than running in Comstock Cup event.

28 October
Palm Springs, California: Road race sponsored by California Sports Car Club, AAA sanction. Events: Production Sports Car Race, 40 mi; Novice Race, 25 mi; Specials Race, 50 mi; and 100-mi Main.

20-27 November
Tuxtla, Mexico to Juarez, Mexico . . . 1,933-mile cross-country road race (2nd annual Mexican Pan-American Race) for modified stock sedans. ANA sanction. See Sept. & Oct. *Road and Track* for details.

December (tentative only)
Ensenada, Mexico to Arroyo Seco, Mexico cross-country road race for sports and stock cars. Sponsored by California Sports Car Club. ANA sanction. Details later.

9 December (tentative)
Las Vegas, Nevada: Sports car road race sponsored by California Sports Car Club. AAA sanction. Details later.

30 December (tentative)
Sebring, Florida: Sports car handicap road race sponsored by SCCA. Details later.

EUROPEAN EVENTS

16 September
Worchestershire, England: Shelsley Walsh Hill Climb.
Monza, Italy: Italian Grand Prix

29 September
Goodwood, England: BARC Race Meet.

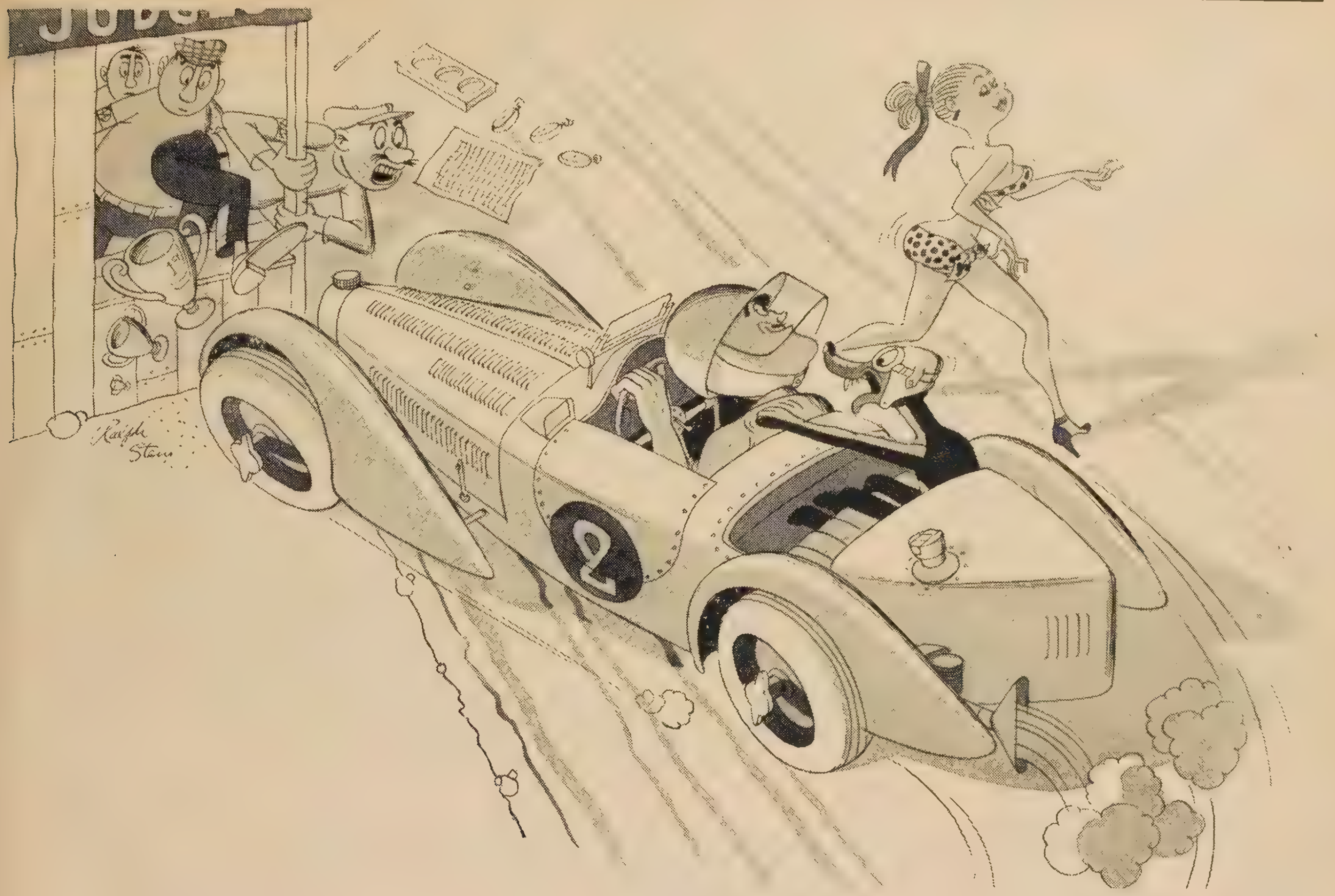
4-14 October
Paris, France: Paris Salon

7 October
Paris, France: Grand Prix du Salon

17-27 October
London, England: International Motor Show

28 October
Barcelona, Spain: Penya Rhin Grand Prix

POETS' CORNER



FALSE RUMOR?

My name is Tom McCahill,*
And I test the latest cars,
For speed, control and comfort,
For rattles, squeaks and jars.

I scorch the hidden highways,
I burn Daytona Beach,
Performing daring deeds of speed,
Beyond the law's long reach.

The curves I take at ninety per,
My foot shoved thru the floor,
I've taken glides and four wheel slides,
While my public yells for more.

I've racked so many sports cars,
And spun so many stocks,
My furrowed scalp is bare as an Alp,
(Tho not so full of rocks.)**

I've hit a quite indecent pace,
With my famous M-I Ford,
And set some fancy records,
So my readers won't get bored.

I've come within an inch or so,
Of permanently partin'
The distinguished British Aston
From its hyphenated Martin.

In a California hot rod
I made one hundred forty;
Your Uncle Tom went like a bomb,
Calm, composed and sporty.

But this one thing I'd like to know,
And that's the name of the guy
Who says I can't drive without
Old Joe, my seeing eye!!!***

Samuel Weill, Jr.

OPTIMISTS

The other night, with car and wife
I went out for our nightly drive,
To test the freshly tuned MG
Down the highway by the sea.

The sparking plugs and points were new,
All tappets right, the mixture too,
Acceleration was divine,
Soon we were doing fifty nine.

And as we passed through Malibu
I turned around and said to Lou:
"Now we are going eighty three."
"Speed limit thirty-five," quoth she.

Just then my mirror turned to red,
A siren howled, I turned my head
And said with utter nonchalance:
"An overtaking ambulance."

I braked and stopped, only to find
The red light pulling up behind;
And that was when we learned by chance
No sheriff drives an ambulance.

Ben and Lou Mayer

INVENTORY

I have an old car which I honestly prize,
Especially for its parking size.
It cuts thru traffic with greatest ease
And goes up hills just like a breeze.

I do my repairs for about a dime
To keep it running all the time.
It always starts in any weather
And rattles — but it holds together.

The windows are high, enough to see
Where a traffic hazard is going to be.
Tho it isn't quite the latest design,
You can bet I'll keep this old Ford of mine!

S. E. Northrop

THE CHEVY AND THE JAG

Chevy Sam was riding along;
T'was a bright and sunny day.
And with the exhaust singing a song
There rode his Chevrolet.

At first old Sam just burst with pride
But then his heart did sag,
For passing there on his right side
Was a shiny Jag.

(Jaguar driver:)
"Hook on to my back bumper, Bub,
I'll haul you to the dump."
(Chevy Sam:)
"Get out of here with that tub
Before I give you a bump.

"If you really think you're hot
I'll have with you a race."
(Jaguar driver:)
"I'll run around that heap you've got;
You couldn't stand my pace."

Chevy Sam and the Jag
Lined up the next day.
The starter dropped his flag
And then they were away.

The sportsman in his Jag
Took the lead away.
For there in the dust did lag
A muddy Chevrolet.

On and on they went—
They sailed along quite fast,
When the Jag (without a dent)
Deigned to stop for gas.

"Take your time, Bub," sez he,
"I could wait around all day" . . .
When, scratched from many a tree,
Came the Chevrolet.

"Fill 'er up," said Chevy Sam,
"But leave the windscreen be,
You needn't give a damn
About what happens to me."

And within the wink of an eye
Chevy Sam was off.
As he went along by and by
His car began to cough.

While at the pit the Jag did stay,
He decided to shine her up.
He said he could wait all day
And still he could catch up.

And after they polished her fine
The Jag was underway . . .
Only to see at the finish line
A muddy Chevrolet.

By James Manahan (14 yrs. old)

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*Any resemblance between persons mentioned herein, and living or actual persons, is purely coincidental!

**This line slightly slightly altered on advice of counsel.

***A coincidental black Labrador retriever.

This scene is from the 1919 version of "Excuse My Dust," and shows Wallace Reid about to punch Roscoe Sarles. Looks exciting, doesn't it?

Did you ever wonder where those unusual cars in the movies came from?

You Saw them in . . .

by Samuel Weill, Jr.

The spectators cheer the contestants on in the new version of "Excuse My Dust." Red Skelton is in second place in the 1900 Sears. You'll have to see the picture to find out if he won!

Several motion picture studios maintain a partial stock of antique, vintage and classic cars, but at one time or another, all are depedent on various vehicles belonging to individuals or rental agencies. The cost of a complete collection would, of course, be prohibitive.

Roger Barlow, of International Motors in Hollywood and Beverly Hills, is the owner of a 1938 Talbot convertible coupe de ville which has "worked" in several pictures, including 20th Century Fox's "On the Rivera," (Danny Kaye, Gene Tierney), Enterprise's "Arch of Triumph" (Charles Boyer, Ingrid Bergman), and is now appearing in Thor Productions' "A Millionaire for Christy" (Fred MacMurray, Eleanor Parker). In this Bert Friedlob picture (20th Century), the Talbot has a good amount of footage and altho wearing leopardskin seat covers with a blush of shame, it steals the show from the stars when it flashes across the screen.

It has a Figoni et Falaschi (Paris) body and with its 115 hp engine, it is capable of a genuine 100 mph. It was originally owned by a Belgian lady who (when forced by the Nazis to decamp from that country during the recent unpleasantness) drove her prized possession to Switzerland. There she recuperated for a brief period and then after much red tape and many delays was able to purchase from the Vichy government a permit (for 50,000 francs) to drive thru that ravaged countryside to Spain. After many a close call with the occupation troops, she reached Spain where she again rested from her travels. Then, in January of 1941, she went to Lisbon, Portugal, from whence she embarked on an American freighter, the Talbot stowed safely in the hold.

Mr. Barlow saw the car in New York the day after it went thru customs, and since the poor lady by this time was low on funds, he struck a deal on the spot. To her, the struggle possibly seemed less than worthwhile, but for Mr. Barlow life was beautiful. He has covered the entire country in this car, and last year tore it down completely to rebuild it from the garage floor up. Its lines are as modern as next year's budget, and many a screen role is yet before it.

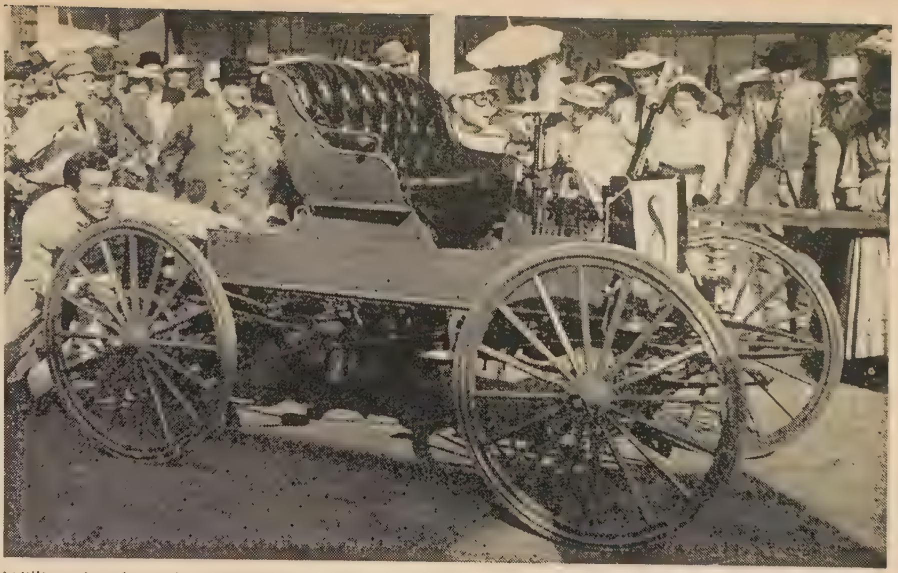
Back in 1919 Wallace Reid starred in a Paramount production called "Excuse My Dust" and here we see him brandishing his fist several feet from the nose of Roscoe Sarles, the famous race driver of an earlier day. This incipient haymaker and the look of "commendable grimness" on the face of Mr. Reid are interesting enough in themselves, representing as they do, a long gone school of motion picture acting, but feast your orbs on those cars! The powerful right-hand drive in which Mr. Sarles is ensconced is a 1918 Revere Racer, with a 4 cylinder Rochester Duesenberg under its hood. Mr. Reid's mount, altho somewhat hors-de-combat, is another interesting make of great fame and past glory. Can any of you readers identify it? We are not even giving away a lead pincushion for the correct answer, but let's see how many different trademarks are tacked on the brass shell of this crippled behemoth!

The new M-G-M Technicolor version of "Excuse My Dust" records some less impressive speeds, but the selection of antediluvian gas buggies in this picture will bring a nostalgic tear to the eye of your Uncle Horace. When this Red Skelton-Monica Lewis feature comes to your neighborhood movie palace, be sure to plank down the necessary nickels and dimes for the price of admission, as the twenty-mile race of eight horseless carriages is the hilarious high spot of a picture whose plot revolves entirely around early automobilia.

No. 1 is a de Dion Bouton, vintage 1898-1900, No. 2 is a 1905 Sear's Farmwagon, sort of any early day Jeep. No. 3 is a 1900 Schacht, while No. 4 is Lindley Bothwell's Baker Electric. (No. 5 had a fouled mainspring and couldn't make the starting line.) No. 6 is a something-or-other made up from a Crosley chassis and the steam unit from a peanut roaster (engineered and built by M-G-M), while No. 7 is a 1900 Oldsmobile, whose factory serial is #4. Last we come to No. 8, being pushed by Red Skelton and William Lundy. This nicely restored speedster is a 1900 Sears which DID start. (We don't want to give the plot away, so we won't tell you any more.)

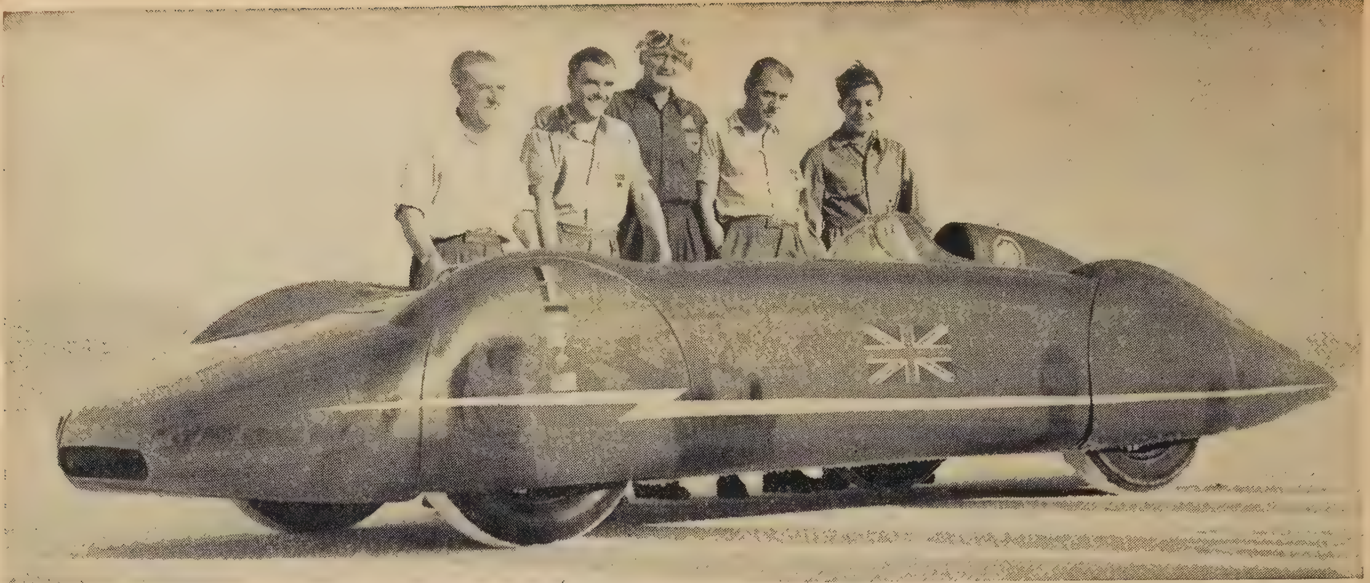
Trick cars, mostly Model T Fords, that disgorged vast quantities of behelmeted police, reared up on their back wheels, or spewed forth large stores of spare parts, were generally built by the studios and were indispensable as comedy props. These cars usually finished their stints by collapsing into a forlorn heap of scrap metal, or by being blown up in what approximated a cosmic upheaval. The studios still build "specials" or have them built by outside craftsmen, such cars as the famous "Topper" job being a case in point. Some of them are used in one picture only, while others are slightly altered and used over and over again. (Notice car No. 3, whose dash is not quite stock.)

Looking at No. 4 again brings to mind some of the slogans which the Oldsmobile advertisements so proudly displayed . . . "You see them wherever you go. They go wherever you see them," "An office on wheels," "Nothing to watch but the road."


William Lundy and Red Skelton push the Sears to get it started. Note the goggles on Skelton.

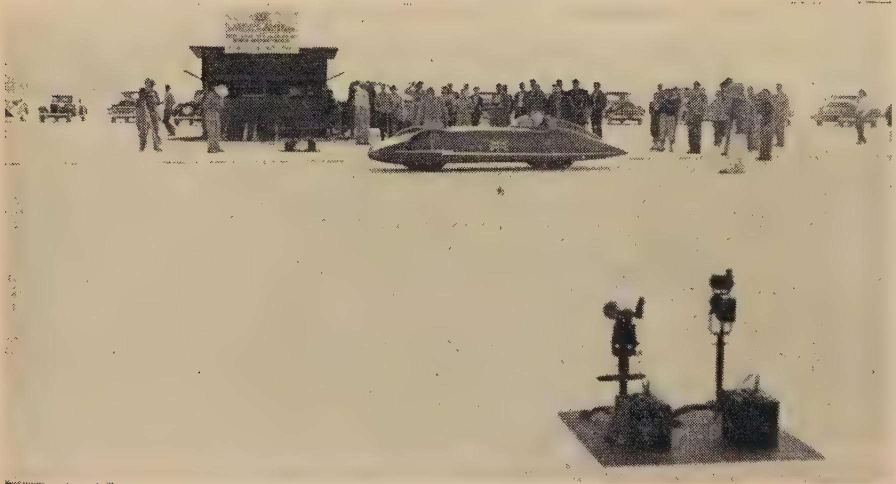
The start of the big race in "Excuse My Dust." Note the cannon used to start the race.

Fred MacMurray driving Talbot with Figoni et Falaschi body in "A Millionaire for Christy."

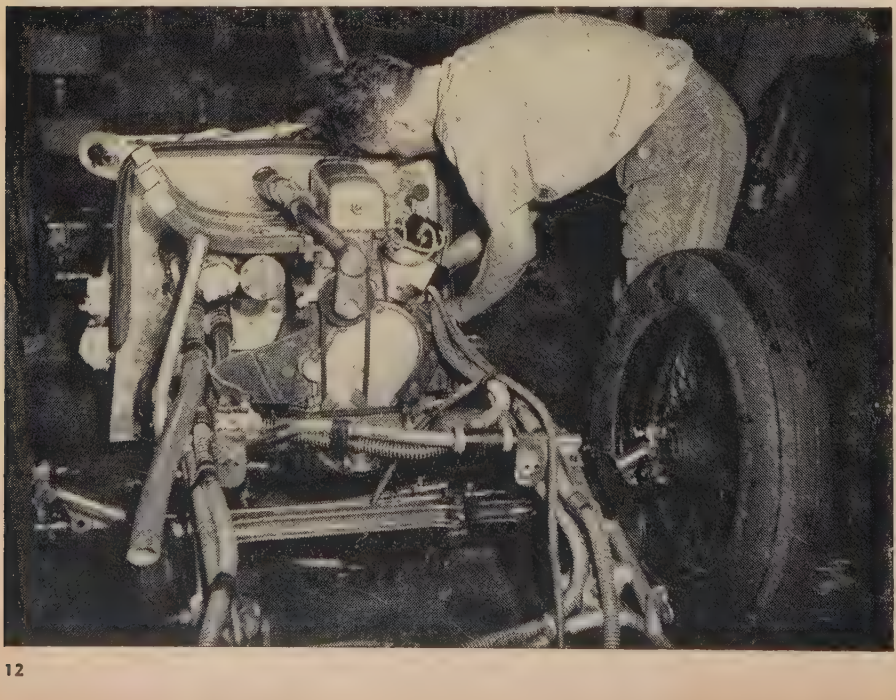


The car and the team—(l. to r.) Dick Benn, Sydney Enever, Lt. Col. A. T. Goldie-Gardner, R. C. "Jacko" Jackson, and George Perry.

MG Sets Record for 1-Hour at Bonneville



"Goldie" Gardner breaks timing beam for the standing-start hour run. Below, Syd Enever installs Engine "A" for straightaway run. Large space forward of axle is for supercharger.



by Lt. Col. A. T. Goldie-Gardner O.B.E., M.C.

(as recorded on Dictaphone)

Hello everybody. No need for a lot of technical talk as I'm only the driver, and I usually try to do what I'm told when navigating this car. The hour-run last Monday was quite good but the speeds were not. Certain things* developed in the early stages of the run which upset me and, until we sorted them out, the lap speed was lower than it should have been. But to show what the little car could do, after half-time we were turning in not less than 140 mph. I think the car could, with everything proper, have lapped that track for the whole hour at 150 mph.

As regards the straightaway . . . the less said about that the better. We were ready on Thursday morning at dawn, we stayed there all of that day, we were there again the next day at dawn, and it wasn't until 2:30 on Friday afternoon that we were told by the "3As" that they had cured the fault in their timing equipment. The weather conditions on Thursday were perfect all day, and I think if we could have run then we certainly would have put out quite a reasonable, and possibly astonishing, speed with this small engine.

When I finally got away at 2:30 on Friday afternoon, rain started almost immediately. Before I reached the first marker, it was coming down in a deluge and 5 miles further on it was even heavier. Just after I passed the timing box on this warming-up run, lightning struck the electrical equipment and blew out half the relays. The return run was even worse. After I passed the timing box, there was water nearly an inch deep on the track which persisted until I got near the pit area when it became nearly 2½ inches. So we ran the car under the tarpaulin and left it at that.

Experienced people expressed the opinion that the salt would be utterly useless for at least 2 days. So we reluctantly decided to call it off. We couldn't have used the salt even if we had stayed on because the track was engaged for the whole of next week. So, this rain today thoroly upset the whole schedule . . . that's the situation.

My timing warming-up run did show that the engine has quite fantastic power. Altho only soft plugs were in, she ran up to 5000 rpm, temporarily, perfectly easy . . . Syd Enever tells me that represents a speed of nearly 160 mph. If we had given it the gun and used full boost pressure, the car would have exceeded 200 mph, to what extent, I'm not prepared to gamble. But it will very definitely exceed 200 mph, which I think is extremely creditable for what is more or less a basic MG TD engine, just slightly boosted up. When I exceeded 200 mph in 1939 I was using a racing engine, which is not at all comparable with this little job. It is all the more credit to the TD engine.

Well, we're off to Salt Lake City . . . I hope to get back some time next year. Good-bye everybody.

From an interview with Col. Gardner

Of the salt beds, Gardner said:

"The salt is an unbeatable surface for high speed runs. It provides the maximum safety, is dead level, provides excellent traction."

Of Bonneville Nationals for hot rods:

"A splendid thing for these enthusiastic young fellows. The salt flats are much safer than any type of paved strip could possibly be. When you hit a different surface and level at speed, you've had it."

Of 500 cc racing:

"Fine, inexpensive racing for the amateur. To spark 500 cc racing in America, you should import a few Coopers, Kiefts, and the like . . . thus you would profit from our experience. Half-litre racing is very interesting and provides excellent training for drivers . . . Stirling Moss, who started on 500s, is Britain's finest driver since Seagrave and is now good in any type of car. In Europe, there is a great market awaiting a practical 500 cc passenger car . . . its racing counterpart is aiding in the design of such a unit."

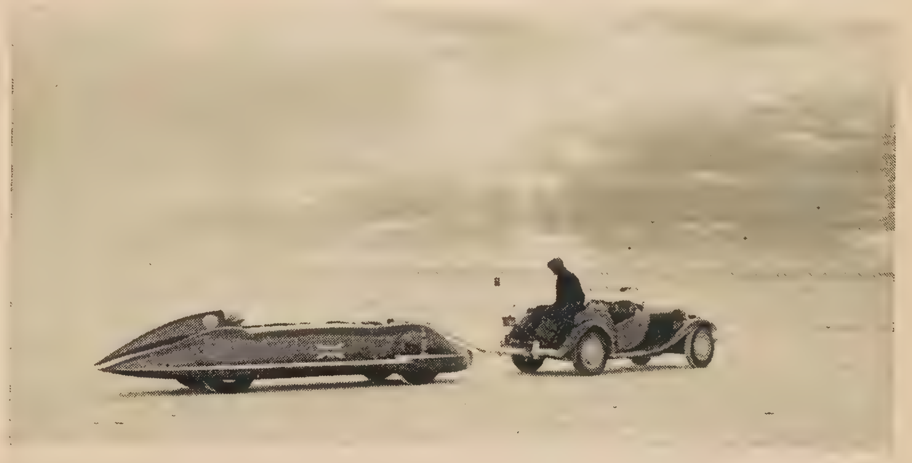
What was your most difficult run? Most exciting?

"My most difficult drive was in the Austin A-40 Sedan at Suffolk County (L.I.) Airport, where Alan Hess and I established 36 stock car records. The course contained eight reverse-camber corners . . . fog reduced visibility to 20 yards . . . front tires changed every 2 hours, rears every 4 hours . . . 2 gallons of petrol lost thru overflow every 2 hours . . . run ended when A-40 collided with a deer. Most exciting was yesterday's run (hour on 10-mi. circular course)."

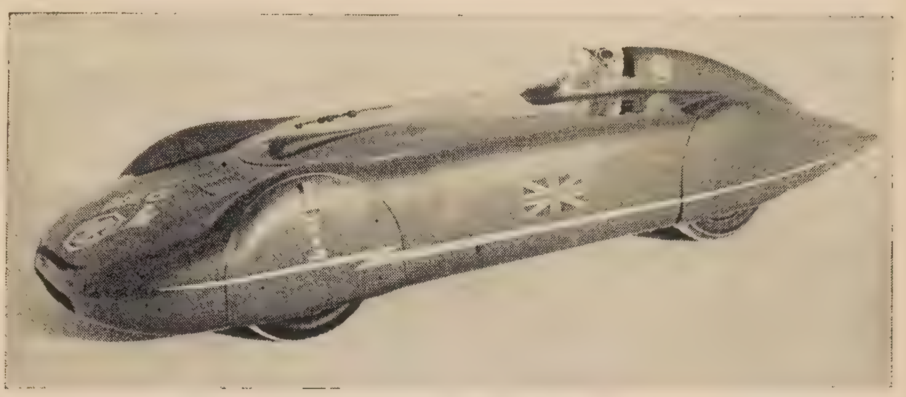
Of future plans:

"I hope to make the 'up to 10-mile' run with the TD engine as originally planned. If possible, I will recapture any records lost to others. Should my plans materialize, I will make some 2-litre runs next year."

Fully enclosed canopy covers Gardner as he makes turn-around on 10-mile straightaway run.



Pit crew use an MG TD with a special tow-bar to start the record-breaker prior to warm up.



Lt. Col. A. T. Goldie-Gardner in the "fastest MG." Cutaway type canopy was used for hour run.

AT BONNEVILLE

The car . . . .

Popularly known as "Goldie" Gardner's MG Special, this fastest-yet MG is actually the "Ex. 135." Built for George Eyston in 1933, the Ex. 135 is constructed chiefly of MG K3 components. Originally fitted with a road racing body and an alternate speedway body, it was not until after the car was purchased by Goldie Gardner in 1936 that the presently-fitted streamlined body, designed by Reid Railton to German 'Jaray' patents, was built. A frontal area of only 11 sq. feet was obtained by reclining the already low seat at a 45° angle. Brakes are fitted to the rear wheels only.

Using a modified K3 six cylinder engine, running variously on 6, 4, 3 and 2 cylinders to meet displacement limits, the car has broken or established well over a hundred International records ranging from Class J (less than 350 cc) to Class E (1500 cc to 2000 cc).

For the hour run at Bonneville, an almost stock MG TD engine, operating at 3½ pounds boost from a shaft-driven Shorrock vane-type blower running at ¼ engine speed, was used with a 3.4 ratio top gear. Compression ratio was the stock 7.25 to 1, cam was stock, valves were stock, valve springs were Mk 2, crankshaft was stock, and rods were stock design of special material. Two S.U. carburetors (model HV, 1¾") and Lodge RL-49 spark plugs were used. A twelve-spring, heavy-duty clutch took the driving load.

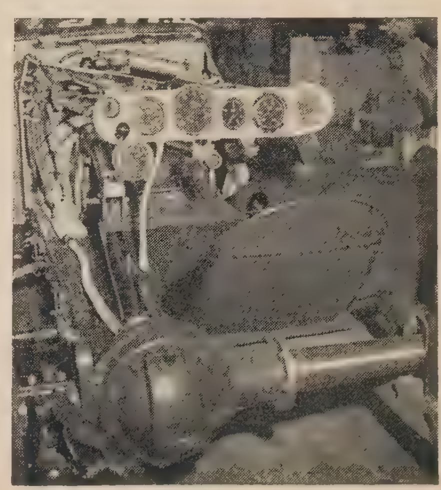
For the straightaway attempt, a similar, but more heavily boosted, TD engine was installed. A larger Shorrock blower, running at ½ engine speed, produced 27 to 30 pounds boost, and was used along with a pair of 2 3/16" S.U. HV carburetors. A compression ratio of 9.5 was used on the ported and polished TD head. Again, the rods were almost the only special parts used. Spark plugs were Lodge RL-52. Dynamometer tests gave a horsepower reading of 213! A 2.8 top gear ratio was used.

Both engines used head gaskets which blanked off the water passages as an outside connection is made between head and block . . . thus controlled water flow is obtained, the block being cooled first. To obtain the very low position of the thick-core radiator, the large header tank is located aft of the fire-wall. An oil radiator is perched on top of its water-cooling counterpart. A Lucas magneto is used.

Special Dunlop 19x5.25 tires were built for the car, and are fitted to K3 wheels having extra spokes.

The complete car, empty, weighs 1800 pounds . . . fully loaded, 2016 pounds. Wheelbase is 8 feet 3 inches, width is six feet, and height is 2 feet 6 inches.

(Continued on page 38)

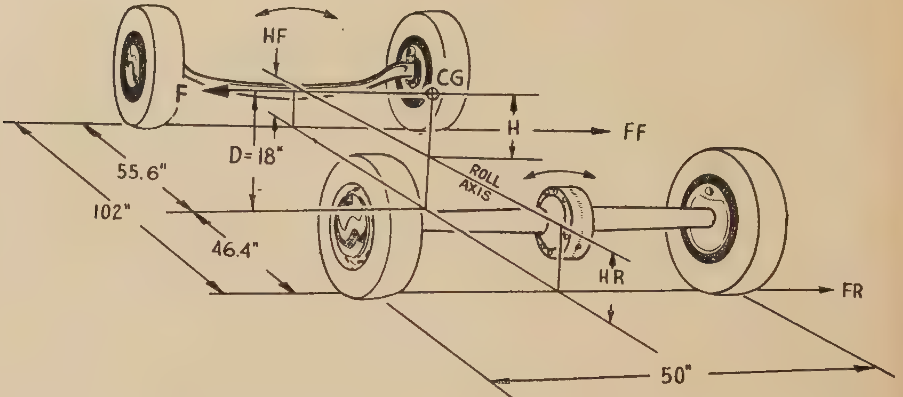


Instrument panel and control layout. Off-center differential and jogged frame allow low seat position. Ring gear to pinion angle is 84°. Steering wheel is quick-detachable.

Building Your Own Sports Car

• An analysis of the problems involved •

By Charles G. Manning



Frame

It is obvious that it will accomplish little to supply adequate damping for a suspension that is tied to a frame so flexible as to bend and twist like an undamped spring. The absolute requirements of frame rigidity are, of course, dependent on the layout of the particular car under consideration. The author proposes that for a competition automobile, the frame torsional rigidity should lie between 5000 and 15000 in-lbs./deg. twist. Determining this frame stiffness is best illustrated by an example. Suppose we have a frame 45" wide and 100" long between front and rear axles. We support the frame on blocks at two opposite corners and begin loading the free corners. When the front of the frame has twisted 1° with respect to the rear of the frame, we note the load on the free corners. The load on the free corner (to twist the frame 1°) multiplied by the frame width at that corner, measures the torsional rigidity of the frame in inch-pounds/degree. In our example, if 200 pounds were necessary on each free corner to twist the frame 1°—the torsional rigidity is 200 x 45 = 9000 in.-lbs./deg. twist.

A frame with adequate torsional rigidity automatically has sufficient bending rigidity and has several times the strength necessary. Therefore, aluminum or high strength steel offer no advantages either from a weight or a rigidity standpoint, over low strength steel.

There are four basic types of frames: (1) single tube "back-bone type" (Skoda), (2) large-diameter tubular rectangle (BMW), (3) tubular truss rectangle (XK-120C), (4) conventional box-section rectangle (Amer. cars).

Of the four types, type 3 can be made the lightest (for a given rigidity) but is also the most difficult to design and build. Type 2 is by far the simplest to design and build and will be nearly as light as type 3. Types 1 and 4 will always weigh several times as much as either type 2 or type 3.

Brakes

In a road race, one must slow down just as often as he speeds up; the hottest car in captivity cannot expect to finish near the front if slowing down for a corner results in "fade" to the point of uselessness. Brake fade is caused by a change in coefficient of friction between the brake linings and drums. Leading shoe brakes depend on the friction between the lining and the drum for their self-energizing feature. As the brakes heat up, the coefficient of friction drops off. Hence, the particularly bad fade characteristics of two leading shoe brakes. Some European competition cars have two or even three trailing shoe brakes and appropriately larger hydraulic cylinders in the drums. This approach does help counteract brake fade. . . . however, charred linings may result. In combating brake fade, venting thru the backing plates helps some as do very large brakes with air directed over the drums.

Brakes fall in two general classes: the heat absorbing type (aircraft, disc, or spot brakes, etc.) and the heat dissipating type (vented, finned, or artificially cooled brakes). Let's first discard the heat absorbing type as they are designed to occupy a small space and to be used only very intermittently. The heat dissipating type are suitable for more frequent use and they rapidly dissipate heat. Probably the most significant development along this line is the Alfin brake drum. The process is a Fairchild Aircraft patent in which an aluminum muff is bonded to the outside of the cast iron brake drum and fins are then machined in the aluminum. The large surface area of the fins and the excellent heat transfer coefficient of the alloy combine to form a remarkably efficient brake drum.

It should be emphasized that cast iron fins are useless . . . . the heat transfer is too slow. The iron fins may be cool enough to touch while the inner surface is actually red hot! The same applies to "pressed on" aluminum fins, which have a large temperature drop from the cast iron to the aluminum. The heat will not flow thru the junction unless it is chemically bonded.

Steering

We've read glowing accounts of steering gears so completely friction free that the steering wheel will whip with the car parked in a slight breeze! If your car weighs 4000 pounds with 70% of the weight on the front wheels, then you had better look one of these outfits up and take along your check book and some co-signers (or get a Chrysler power-boost.) If, however, your car is to weigh 1000-2000 pounds with less than 50% of the weight on the front wheels, don't worry about a little extra friction. Instead, let us choose steering that can be adjusted to almost no backlash (or play) and can be purchased for a reasonable price.

Almost any stock American car steering is adaptable and the difference between them is small. Drag link steering reduces wheel lock (larger turning radius); while cross steering may interfere with radiator location. There is little choice between the two. All stock steering gears have one thing in common . . . . they are too slow—between 20 and 28 to one; or 4-5 turns, lock to lock. In the light, short wheelbase, sports car, front wheel motion required to control a power slide must occur so fast that there is not sufficient time to spin the steering wheel back and forth. For our design, about an eleven to one steering ratio will be desirable, giving approximately 2 turns, lock to lock.

Probably the easiest method of lowering the steering ratio is to lengthen the pitman arm. Long pitman arms are available for some steering systems but building a new one is relatively simple. If the spline on the one end or the taper on the other cannot be duplicated, they can be cut out of the old pitman arm and welded into a new blank, flame-cut from ½ inch steel plate. The new plate should completely encircle the old ends so that the welds need work only in shear. Magnafluxing of all steering gear parts is recommended.

Engine Cooling

The choice of radiator can make or break the whole design. However, if a fan is used, cooling ceases to be a problem; provided the fan blades can be made to stay on their hub at high rpm. Some experimenting with fan diameter, number of blades, their pitch, and ducting may also be necessary. On the other hand, a fan soaks up 5-10 hp (and sounds like it's using 100). The other alternative is a big enough radiator so that a forced draft isn't required. If a fan is used, we need only concern ourselves with total heat exchange area. For example, a radiator one sq ft in frontal area and about 3 feet thick will do the job if enough fan hp is used to pull the air thru. With no fan, the radiator must have a very thin core (1½") or the air will flow thru too slowly to do any appreciable amount of cooling. We are, therefore, stuck with a large frontal area radiator, a large grille opening and plenty of exit area. In addition, the radiator water will gradually come to a boil if the engine is allowed to idle while the car is standing still.

One solution is a declutchable fan that can be engaged or disengaged from the driver's seat while the engine is running. Then, in thick traffic, on a long steep hill, or with a tailwind we have extra cooling available. An excellent fan is the eddy current drive type available for '46-'48 Fords. The battery furnishes power to operate an electric clutch and the fan is controlled by a switch. A large variety of mechanical friction drive designs is also possible. A swinging arm may be fashioned to hold the fan which is moved to engage its pulley with the water pump pulley. Don't consider electric fan drive because a fan driven by a 5 hp, 6 volt, continuous duty motor, supplied by a 700 amp. generator, would weigh about 250 pounds and would cost a small fortune.

Determining the absolute size of radiator depends upon too many factors for the some builder or designer. However, a high performance sports car will need at least double the ratio of radiator cooling area to gross weight found in passenger cars. Approximate radiator cooling area would be the frontal area of the core times the core thickness, keeping in mind that our core thickness must not exceed 1½-2" if no fan is used.

Engine

In an attempt to say something useful about engines in less than 100,000 words, we'll confine this discussion to desirable and undesirable engine characteristics as related to sports car design.

First, we want a fat hp/rpm curve. By that we mean not only a high maximum output, but the ability to hold something near maximum over a wide range of rpm. In short, we are interested in the area under the hp/rpm curve over the range of rpm we expect to use.

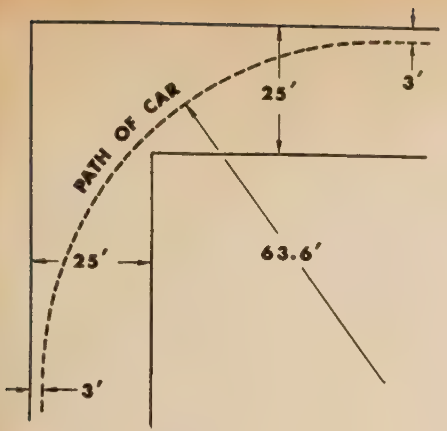
This useful range is determined by the number of forward speeds available in the transmission and the type of race course. Thus, the engine with the lower peak hp will show a faster lap time with a transmission such that the useful range is 3000-7000 rpm.

A second important characteristic is the ability of the engine to hold maximum output for a long interval of time. Engines with iron heads and pistons or improperly cooled exhaust valves are often bad from this standpoint. After a minute or two of running at full throttle these engines develop hot spots which raise the octane requirement of the engine. Large power loss due to detonation or part throttle running is then inevitable.

Engines fitted too tightly also have the same characteristics, but for a different reason. These experience an increase in friction hp with increase in BMEP, and the extra friction usually comes from insufficient piston clearance.

In practice, engine accessories are often the cause of similar power losses. All too often, new spark plugs which are incapable of firing against 140 psi pressure will be installed in an engine that will crank 150 psi cylinder pressure on the starter. If your engine is 8½ or 9 to one compression ratio, this is your problem, as very few commercially obtainable plugs will fire at 150 psi and fewer still when the plug is hot.

We should also consider parts availability when choosing an engine. Any engine used for active competition will have a high rate of parts consumption. If you order a new set of bearings or valves and they take six weeks to arrive, (and 12 weeks to return and exchange for the right ones) then maintenance becomes a real problem. We should also resist the dirt cheap D.O. 2-stage whose manufacturer disappeared from the face of the earth ten years ago. A set of hand forged and machined connecting rods can come to a ridiculous price. This is in contrast to the ads for production engine overhauls which state, "New pistons, pins, and rings . . . . pins fit and rods aligned . . . . only $18.00."



Appendix "A"

Derivation – Acceleration in Turn

P_S = Load on Rt rear wheel with no power applied.

T = Torque – rear wheel

Rear axle ratio = 3.93, Tread = 50 side load factor = .55

Coefficient of friction – rubber on clean dry concrete = .95, 14" radius rear wheel

$$TH = (.95 \rightarrow .55)\,2\left(P_S - \frac{T}{3.93\times50}\times\frac{C_F}{C_F+C_R}\right)$$

$$T = TH\times14$$

$$TH = (.95 \rightarrow .55)\,2\left(P_S - \frac{14TH}{3.93\times50}\times\frac{C_F}{C_F+C_R}\right)$$

$$TH = 1.55P_S - \frac{1.55\times14TH}{3.93\times50}\times\frac{C_F}{C_F+C_R}$$

$$TH\left(1+\frac{1.55\times14}{3.93\times50}\times\frac{C_F}{C_F+C_R}\right)=1.55P_S$$

$$TH = 1.55P_S\Big/\left(1+\frac{.434}{3.93}\times\frac{C_F}{C_F+C_R}\right)=\frac{1.55P_S}{\left(1+\frac{.1105C_F}{C_F+C_R}\right.}$$

Derivation – St. Line Acceleration

$W = 3100$ (wt), $D = 18$ (C.G. height)

$$TH = .95\times2\left(P_S+AP_S-\frac{T}{50\times3.93}\times\frac{C_F}{C_F+C_R}\right)$$

AP_S = Wt. transfer to rear wheels as car accelerates fwd.

$$AP_S=\frac{18TH}{2\times102W}=\frac{18TH}{102\times2}$$

$$TH = 1.90\left[\left(P_S+\frac{18TH}{2\times102}-\frac{T}{50\times3.93}\times\frac{C_F}{C_F+C_R}\right]\right.$$

$$TH\left(1-\frac{1.90\times18}{2\times102}\right)=1.90\left(P_S-\frac{T}{196.5}\times\frac{C_F}{C_F+C_R}\right)$$

$$.832TH = 1.90\left(P_S-\frac{T}{196.5}\times\frac{C_F}{C_F+C_R}\right)$$

$$T = TH\times14$$

$$.832TH = 1.90\left(P_S-\frac{14TH}{196.5}\times\frac{C_F}{C_F+C_R}\right)=1.90\left(P_S-\frac{TH}{14.05}\times\frac{C_F}{C_F+C_R}\right)$$

$$TH\left(.832+\frac{1.90}{14.05}\times\frac{C_F}{C_F+C_R}\right)=1.90P_S$$

$$TH=\frac{1.90P_S}{\left(.832+\frac{1}{7.39}\times\frac{C_F}{C_F+C_R}\right)}$$

Appendix "B"

Case I – Cornering

$C_R = 2C_F,\ h_f = 0,\ h_r = 14,\ H = 18-14\times.545 = 10.38$

Coupl. on front sus. $=\frac{C_F}{C_F+C_R}(FH)+F_F h_f$

" " Rear " $\frac{C_R}{C_F+C_R}(FH)+F_R h_r$

$F = .55\times3100 = 1705$

$F_R = 1705\times.545 = 930,\ F_F = 1705-930 = 775$

Rear Coupl. $=\frac{2}{3}(1705\times10.38)$ 930×14

$= 23{,}900$

The Rt. rear tires carries

$$P_S=\frac{3100\times.545}{2}-\frac{23970}{50}=367^{\#}$$

If no power is applied.

With a differential, the total rear wheel thrust is —

$$TH = 1.55P_S\Big/\left(1+.1105\frac{C_F}{C_R+C_F}\right)$$

$$TH = 1.55\times367\Big/1+\frac{.1105}{3}=550^{\#}$$

Case II – Cornering

$C_F = 6050^{\#}$ in/deg., $C_R = 1730^{\#}$ in/deg, $F_R = 930$

$h_f = .5,\ h_r = 9.15,\ H = 18(.5+.545\times9.25) = 12.46$

Couple on rear sus. $=\frac{1730}{7780}(1705\times12.46)+9.75\times930 = 4730+9060 = 13790^{\#}$ in.

Rt rear tires carries, $P_S = 845-\frac{13790}{50}$ $= 569^{\#}$ (no power)

Thrust $= 1.55\times569\Big/1+\frac{.434}{3.93}\left(\frac{6050}{7700}\right)=812^{\#}$

Case III – Cornering

The XK-120 roll bar has a rate of $3440^{\#}$ in/deg, therefore $C_F = 6050-3440$ $= 2610^{\#}$ in/deg.
$C_R = 1730^{\#}$ in/deg

$h_f = 14,\ h_R = 9.75,\ H = 18-[9.75+.455(14-9.75)]$ $= 6.32$

Couple rear sus. $=\frac{1730}{4340}(1705\times6.32)+930$ $\times9.75 = 13360$

Rt. rear tire carries $P_S = 845-\frac{13360}{50}$ $= 578^{\#}$ (no power)

Thrust $= 1.55\times578\Big/1+.1105\left(\frac{2610}{4340}\right)=\underline{840}^{\#}$

Case IV Cornering

$C_F = 6050,\ C_R = 1730,\ h_f = 14,\ h_R = 9.75$

$H = 18-[9.75+.455(14-9.75)] = 6.32$

Couple rear sus. $=\frac{1730}{7780}(1705\times6.32)$ $+930\times9.75 = 11460$

Rt rear tire $= P_S = 845-\frac{11460}{50} = 615^{\#}$ (no power)

Thrust $= 1.55\times615\Big/1+.1105\left(\frac{6050}{7780}\right)=$ $\underline{\underline{878}}^{\#}$

Case V Cornering

As in case IV, $P_S = 615$
Thrust $= 2\times615 = \underline{\underline{1230}}^{\#}$

Because the drive shaft torque does not tend to lift the Rt. rear wheel.

Distance gained in corner over car #1

The difference in thrust of the various cars with respect to car #1 is.

$ATH_1 = TH_1-TH_1 = 560-550 = 0$
$ATH_2 = TH_2-TH_1 = 812-550 = 262$
$ATH_3 = TH_3-TH_1 = 840-550 = 290$
$ATH_4 = TH_4-TH_1 = 878-550 = 328$
$ATH_5 = TH_5-TH_1 = 1230-550 = 680^{\#}$

Distance gained $=\frac{1}{2}AT^2=\frac{32.2}{2}\,\frac{ATH}{W}(3)^2 = S$

$W = 3100$ $\quad S = ATH\left(\frac{1}{21.4}\right)$

Distance gained:

$S(1-1) = 0\left(\frac{1}{21.4}\right) = 0$
$S(2-1) = 262\left(\frac{1}{21.4}\right) = 12.2$
$S(3-1) = 290\left(\frac{1}{21.4}\right) = 13.6$
$S(4-1) = 328\left(\frac{1}{21.4}\right) = 15.3$
$S(5-1) = 680\left(\frac{1}{21.4}\right) = 31.8$

H.P. required (or usable H.P.)

$HP = TH\times33.5/550 = TH/16.4$
$HP_1 = 550/16.4 = 33.5$ hp
$HP_2 = 812/16.4 = 49.5$ hp
$HP_3 = 840/16.4 = 51.2$ hp.
$HP_4 = 878/16.4 = 53.6$ hp
$HP_5 = 1230/16.4 = 75$ hp

Straight line, standing start acc.

$$P_S = \frac{3100\times54.5}{2} = 845^{\#}$$

Thrust $1.90P_S\Big/\left(.832+\frac{1}{7.39}\frac{C_F}{C_F+C_R}\right)=$

$$\frac{1605}{\left(.832+\frac{1}{7.39}\frac{C_F}{C_F+C_R}\right)}$$

St. line acc.

1st Case – $\frac{C_F}{C_F+C_R}=\frac{1}{1+2}=\frac{1}{3}$, $TH=\frac{1605}{.832+\frac{1}{3\times7.39}}=\underline{\underline{1830}}^{\#}$

2nd Case – $\frac{C_F}{C_F+C_R}=\frac{6050}{7780}$, $TH=\frac{1605}{\left(.832+\frac{6050}{7.39\times7780}\right)}=\underline{\underline{1712}}^{\#}$

3d. Case – $\frac{C_F}{C_F+C_R}=\frac{2610}{4340}$, $TH=\frac{1605}{\left(.832+\frac{2610}{7.39\times4340}\right)}=\underline{\underline{1625}}^{\#}$

4th Case – $\frac{C_F}{C_F+C_R}=\frac{6050}{7780}$, $TH=\frac{1605}{\left(.832+\frac{6050}{7.39\times7780}\right)}=\underline{\underline{1712}}^{\#}$

5th Case $TH = 2P_S=\frac{845\times2}{.832}=\underline{\underline{2030}}^{\#}$

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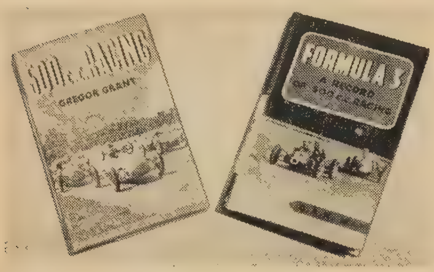

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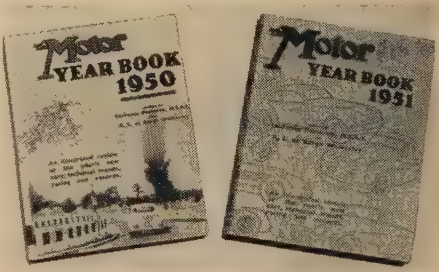

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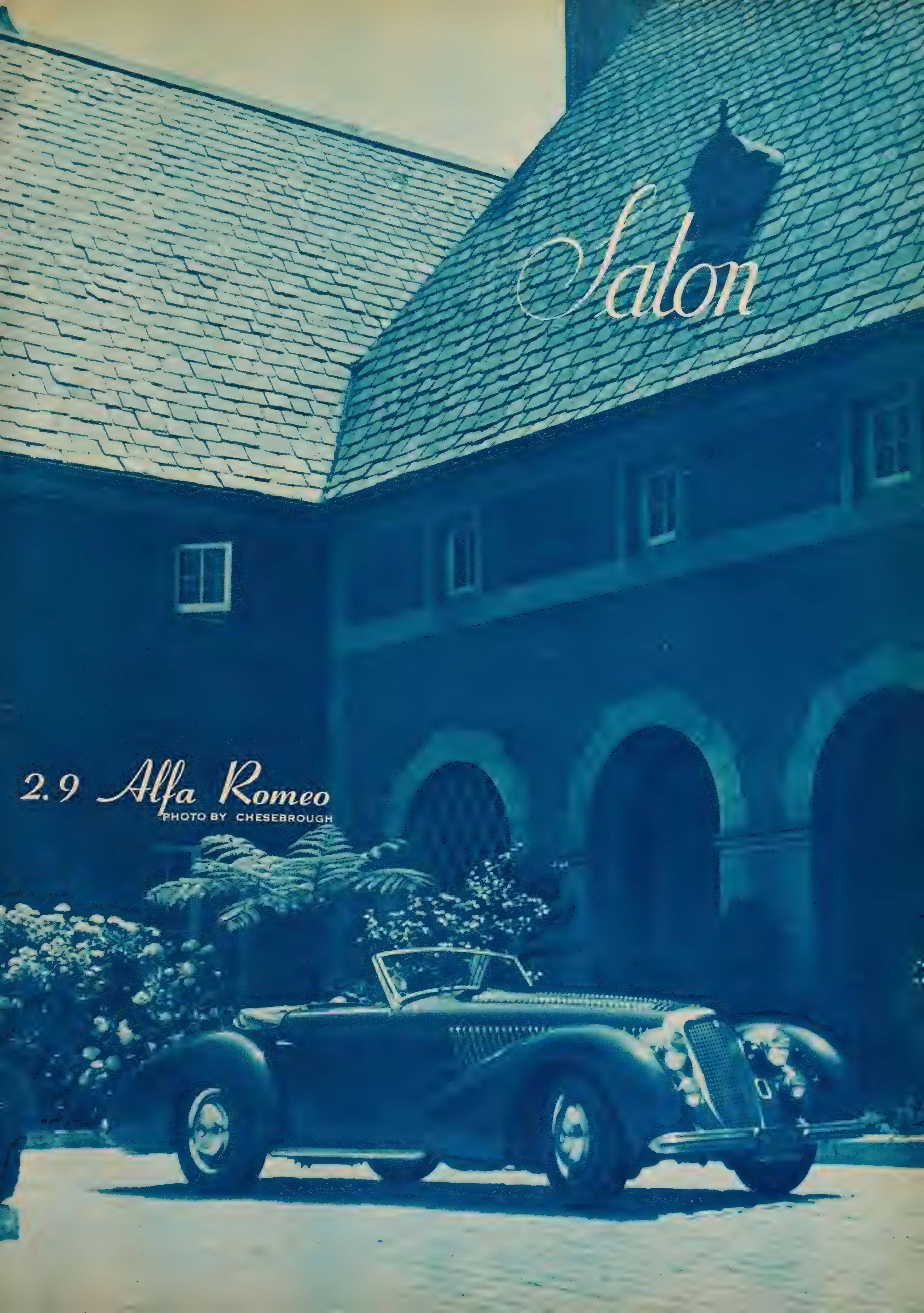


Salon

2.9 Alfa Romeo

PHOTO BY CHESEBROUGH

Gonzales at the wheel of his 2-litre blown Ferrari. This combination defeated the Mercedes.

FROILAN GONZALEZ

Article and Photos by Dr. Vincente Alvarez

The man who showed the fabulous 3-litre Mercedes team the fastest way around the Buenos Aires race course last year has gone to Europe and played the same trick on the invincible Alfa-Romeo team (Silverstone Grand Prix). And thus a new star is born!

The European fans have made Jose Froilan Gonzalez an idol . . . and he deserves the distinction. Temperamentally opposite from his countryman Fangio (August, *Road and Track*), "Cabezon" Gonzalez is completely merciless, with himself and with his car. ("Cabezon" translates "Big Head," and so he was affectionately dubbed because of certain attitudes which, offensive to some, quickly pushed him out in front of the other drivers.)

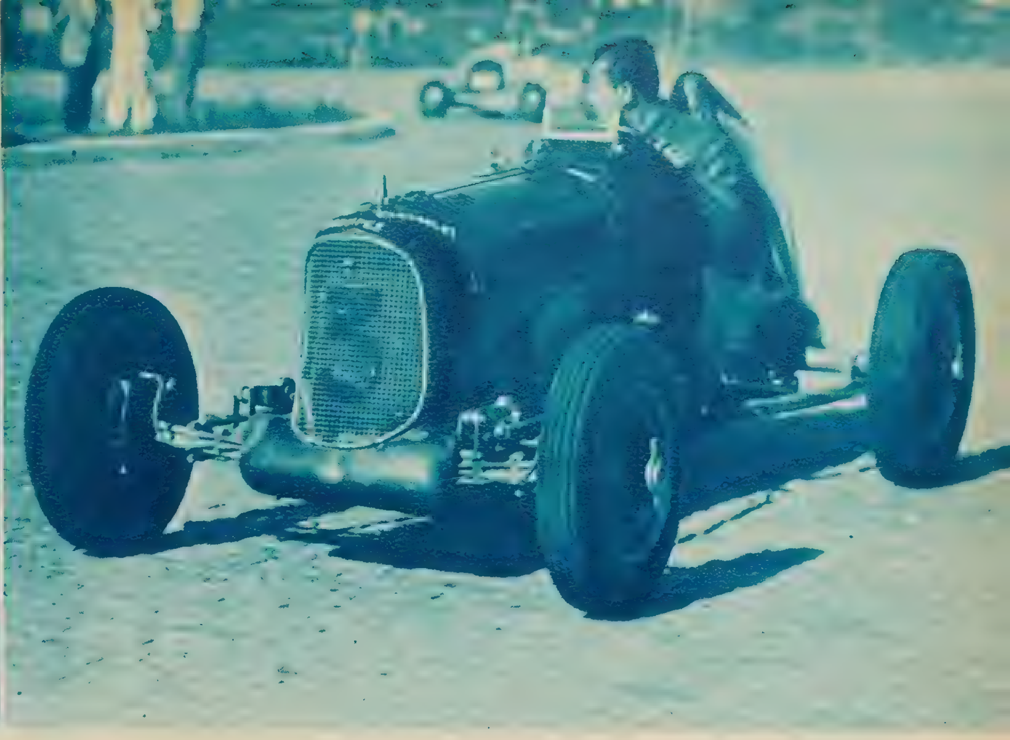
His driving style is completely different from Fangio's, being 100% on the wild side, giving car and competition absolutely no quarter. Connoisseurs of driving style are shocked when they see Gonzalez swinging back and forth in the cockpit, jumping up and down in the seat like a gaucho on a bronc, while his arms cross up in an impossible fashion as he gets into a full-lock power slide. How it happens no one knows, but the car seems independent of Jose's wild manipulation at the controls. And the short wheelbase Ferrari he drove against the Mercedes was the ideal car to display this South American's peculiarities—it continued accurately and surely about the circuit in spite of the unorthodox Gonzalez style.

One of the mysteries which surrounds this new sensation is his accident-free record. With all his aberrant sliding, skidding and impossible cornering, he has yet to flip a car, touch a hay bale, or even scratch paint! He frowns on goggles and only wears them during extremely bad driving conditions. Helmets are usually ignored, which allowed friends to blame his sunstroke (1950 Buenos Aires Races) on the wide expanse of cranium which was exposed to the blinding rays. Our hero quite seriously insisted on measuring everyone's head in the immediate vicinity,

The unusual driving style of Gonzalez departs 100% from the classical style of the Grand Prix driver. He pushes the throttle to the floorboard, and holds it there, regardless of skid, drift, swerve, or anything. And he gets around the tricky road courses very fast indeed.

Froilan Gonzalez drives the 4-cylinder Ford special in the Buenos Aires Grand Prix in 1948.

Ford holds the lap record at several ovals. builder, Atilio Plini, is driving it here.



Warming up for the 1947 Buenos Aires G.P., this was his first race car, a 1928 Chevrolet.

proving that his hat size was smaller than most of his benevolent tormentors'. This maneuver availed him little, since the jokers thereby dubbed him the Spanish equivalent of "Dome-Top Piston," claiming that it was Jose's enormous face which made his head seem so big.

However, much of Gonzalez' attitude was only overexuberant and ambitious youth; in four years of hard driving he has changed from a bullying, cocky, spoiled kid into a serious, competent race driver. This writer has condemned Jose Froilan Gonzalez' attitudes in the past. However, I am anxious to go on record now as one of his staunchest admirers! The public does not accept new talent easily. The fans, if given a chance, will put the up-and-coming novice thru a trial-by-fire with their chaffing, and this they did with Gonzalez until he proved himself. Now he is a favorite. The years have done a good job of polishing him, technically and otherwise, until now there appears a mature pilot who was able to remark, with serene and quiet self-confidence (before the 1951 B.A. Race):

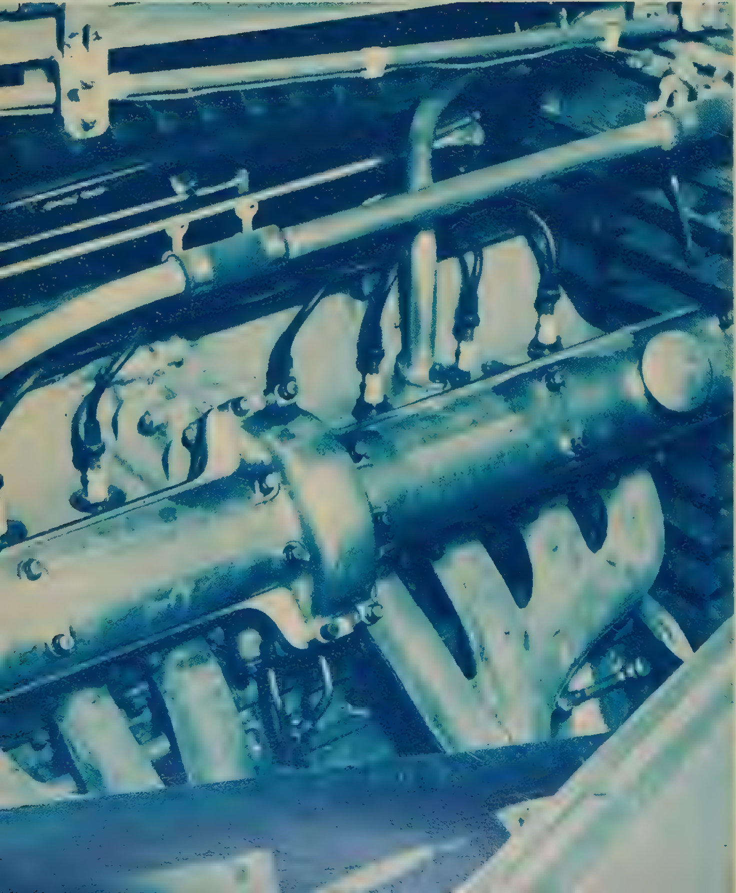
"The Ferrari is in good shape. Tho I may not beat all three Mercedes, I *will* show the tail-pipe to at least one of them. I'll be fighting from the very start, because Menditeguy will be pushing me with his 3.8 Alfa. I'll *have* to push the Mercedes too, whether I like it or not!"

(continued on page 36)

His car threw a rod in this race. They fixed it in time to run in a later event, which he won!

At right, Gonzalez tries the 1.5 Maserati. Below, his greatest victory . . . he drove this 4.5 Ferrari to victory at Silverstone over the Alfas.

2.9 ALFA



Readers will recall the September article on the 540-K Mercedes. This month, *Road and Track* swings you to the other end of the sports car scale. From the heavy, Wagnerian roadster to the volatile, Italian Alfa-Romeo 2.9 Sports.

These two cars, built to satisfy opposite types of enthusiast are easily likened to a couple of operatic tenors. The former bringing to mind the famous *heldentenor*, Lauritz Melchior . . . big, impressive, heavy-voiced, while the latter is styled along the lines of the newly popular Mario Lanza . . . excitable, volatile and high-revving.

Our good friend Peter Satori responded to our request to drive and report the Alfa in his usual fashion . . . generously. But it seemed there were hitches.

"It makes a terrible noise! Such a terrible noise," he commented sadly.

"But we don't mind that, Mr. Sato——"

"And another thing. You *cannot* drive this car slowly."

"We'll be very caref—"

"Not only that . . ." Mr. Satori went on.

"Ahem" we said. We generally end up saying "ahem" to Mr. Satori.

"I myself was stopped three times between Beverly Hills and Pasadena. This car definitely offends the police."

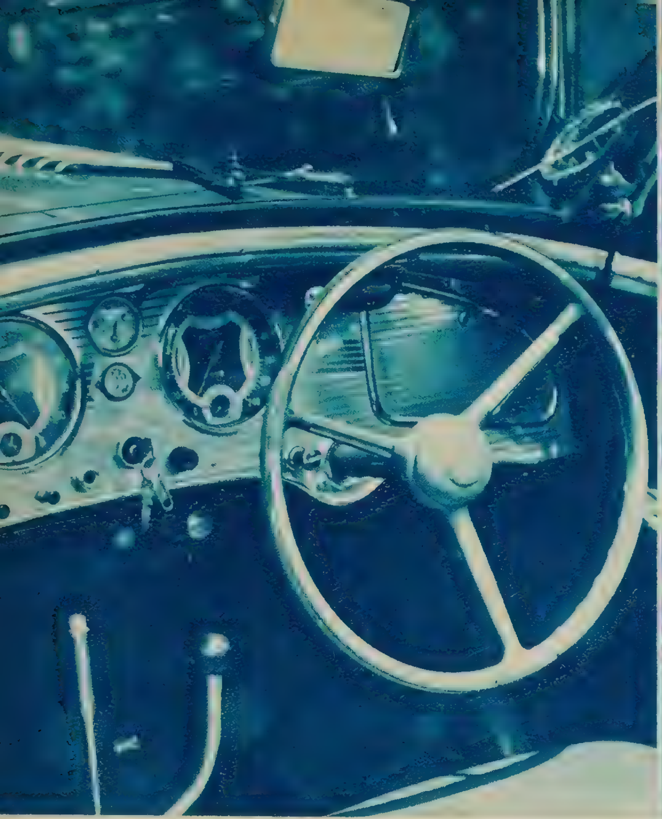
But we decided to trust to luck as far as the gendarmes were concerned. Mr. Satori made the car sound fascinating! More than ever we decided the readers would like to hear about it.

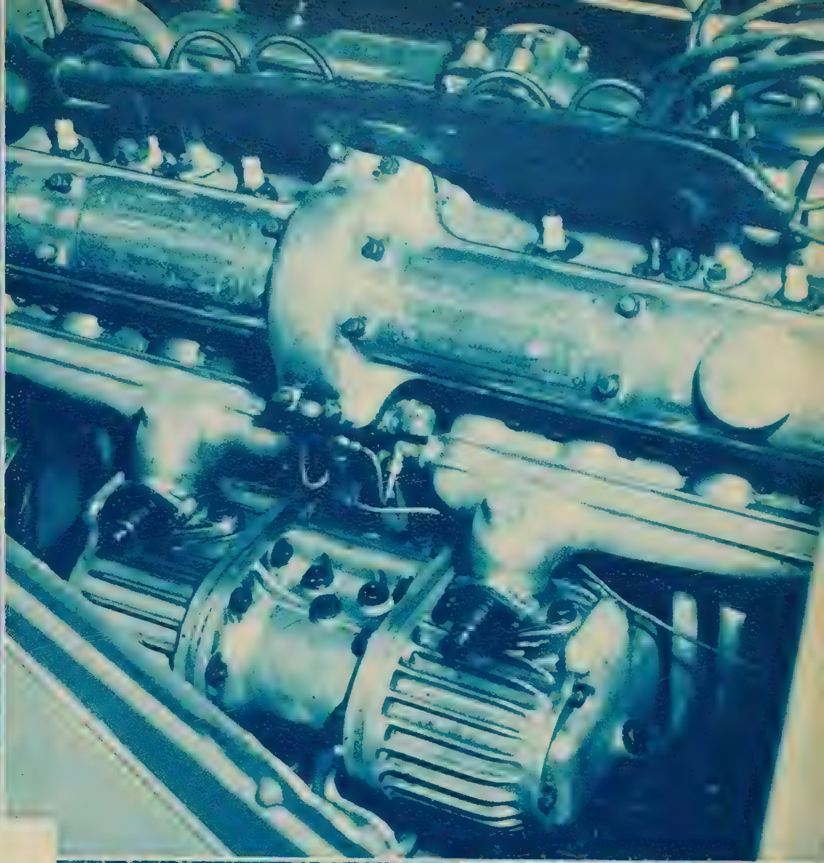
Tom Frisbey, of Satori's Pasadena place, checked us out on the car. There were a couple of tricky items which take a little getting used to. If you've driven a Grand Prix car (and, of course, you probably have) you know that the throttle is located between the clutch and brake pedal, so that you may rev the engine and drop into third while braking on a sharp corner. Then there's a hand pump under the dash.

"One pump if the car is warm, two if it's cold," Frisbey explained. So we pumped it once because the engine had been run a few minutes previous, and then fiddled with the ignition key . . . fruitlessly. Frisbey explained that the key, unlike those on most cars, is merely pushed in to make the circuit. *Turning* the key activates the lights. Next, we reached for the gear shift lever, which comes up thru the floor via a "gate," which you know is a slotted plate, each slot devoted to a single gear (1st, 2nd, 3rd, 4th and reverse). This presented no problem, tho Tom warned us to be sure and close the reverse slot when we were not using it. There is a movable metal flap over this "back-up" groove to protect the unwary during fast shifts.

So there we were, ready to go . . . the Alfa snarling and spitting and coughing. Obviously this fiend disliked sitting still.

"Better get going before she boils!" Frisbey yelled. There is no fan on the engine . . . no room for one, either. The entire hood was taken up with 2900 cc of double overhead cam straight eight . . . a whole room full of aluminum . . . and beautiful!





We let in the clutch and took off down the boulevard, both blowers screaming their heads off. What a thrill *this* was turning out to be! Before we got out of second, a red light loomed and we hit the brakes. The stopping capabilities of the Alfa were heart-warming. Large aluminum brake drums, which filled the wire wheels out to the rims, did their job like they were supposed to. And good brakes were needed on this model because the supercharger on the front four cylinders clasped hands with the blower on the rear four and the first thing you knew, there you were . . . about a mile up the road.

Stabilimenti Farina is responsible for the eye-catching yet functional aluminum body this independently suspended chassis lugs around. Incidentally, let's get the record straight about these Farina boys.

Stabilimenti, which isn't anybody's first name, but means "establishment", is run by the present World's Champion Race Driver, Dr. Guiseppe "Nino" Farina, who goes out on Sunday with the Alfa team and runs away from nearly everybody. (We use *nearly* advisedly. Ferrari, you know, is creeping up fast.) Next, there is Pinin Farina, also one of the top custom body builders in Europe and lately retained by Nash of America. Pinin is the eminent doctor's uncle. There are other Farinas, but if you keep these two straight, you won't get into too much trouble.

To get back to the 2.9 Alfa, we took off thru the hills under a full head of steam, staff photographer Chesebrough keeping a gimlet eye peeled for good backgrounds.

The Alfa (whose chassis and engine are an identical twin to the car which performed so nobly for Phil Hill at Pebble Beach) was thrilling to drive in traffic. Its fantastically light steering was a joy. Its acceleration was all that could be asked for, but it wasn't until we began diving into corners that the car showed its true colors. Of course, we realize that this doesn't happen, but it actually seemed as tho the Alfa banked inward on a corner—like an airplane. The ride was positive, yet comfortable and, in a "full bore" corner, it offered unbelievable security. A half turn of the wheel, a light stab at the accelerator and you were around the bend with no fuss or feathers . . . and no tire howl! Another gratifying feature . . . the car was so beautifully balanced that the driver finds it hard to make a mistake. On one occasion we were forced to slam on the brakes in the middle of a fast turn . . . sure disaster in most cars. The Alfa came to an abrupt halt . . . sure evidence that all four wheels were on the ground to stay. Pretty good for a car produced in 1938!

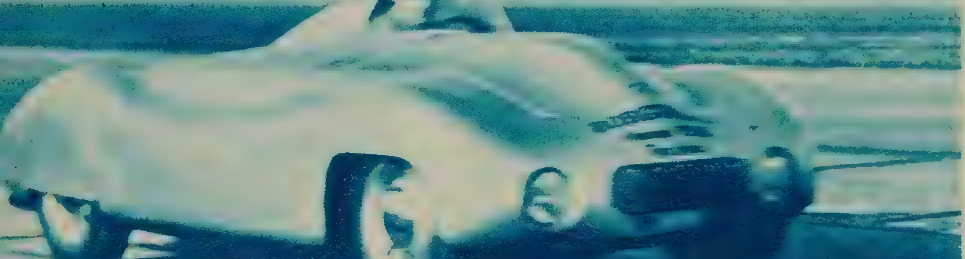
When we hoisted the Alfa up in the air to have a look see, the service station attendants were shocked to learn that the car was 13 years old. They ogled the independent rear suspension and the oil tank mounted in the rear (the car has a dry sump oiling system). Looking at the bottom side of the car was much like peeking under the hood—aluminum everywhere. From stem to stern, the Alfa is a masterpiece. I wonder who the lucky owner will be?

BORGWARD HANSA 150

In the first post-war German attempt to conquer international class records, the Borgward "Hansa" 1500 cc was highly successful. At the famous Montlhery track, outside Paris, the car ran smoothly, was stopped several times by a plague of bugs (real ones) which got into "der vergaser" (carburetor). Fuel consumption, even in these extreme conditions of high speed stress, was only 2.9 gph.

The other "first" Borgward is their production Hansa (sedan and convertible), which is the only 1500 cc car in the world to list a fully automatic transmission* as optional equipment. The Borgward "Stream," unlike most automatic gear changing mechanisms, is light and small, using little more space than the standard gear box. It does away with the clutch pedal altogether, will carry the Hansa up a 30% grade with ease.

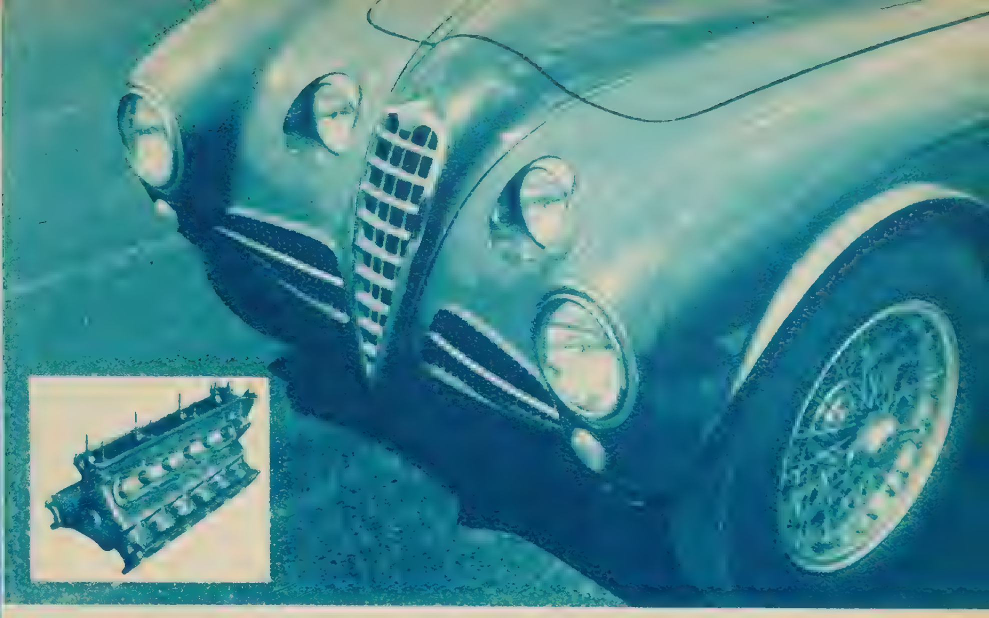
*Torque converter. Direct drive in 4th gear.



The aerodynamic Hansa 1500 which broke 12 international class records at Monthlery. Both engine and chassis of this car are basically the same as the production-built passenger car.

MONTLHERY RECORDS

	new record	old record
1000 Miles	107.1 mph	102.1
2000 km	105.2 mph	100.8
12 hours	105.2 mph	100.8
mileage covered	1262.9 miles	1210.5
3000 km	95.1 mph	92.5
2000 miles	95.1 mph	91.4
24 hours	94.2 mph	91.7
mileage covered	2261.8 miles	2201.6
4000 km	94.3 mph	79.6
3000 miles	91.6 mph	79.6
5000 km	91.3 mph	79.4
4000 miles	91.3 mph	79.6
48 hours	91.7 mph	79.6
mileage covered	4402.6 miles	3824.1
5000 miles	89.5 mph	79.2



SPECIAL 230hp ALFA

Article and Photos by Corrado Millanta

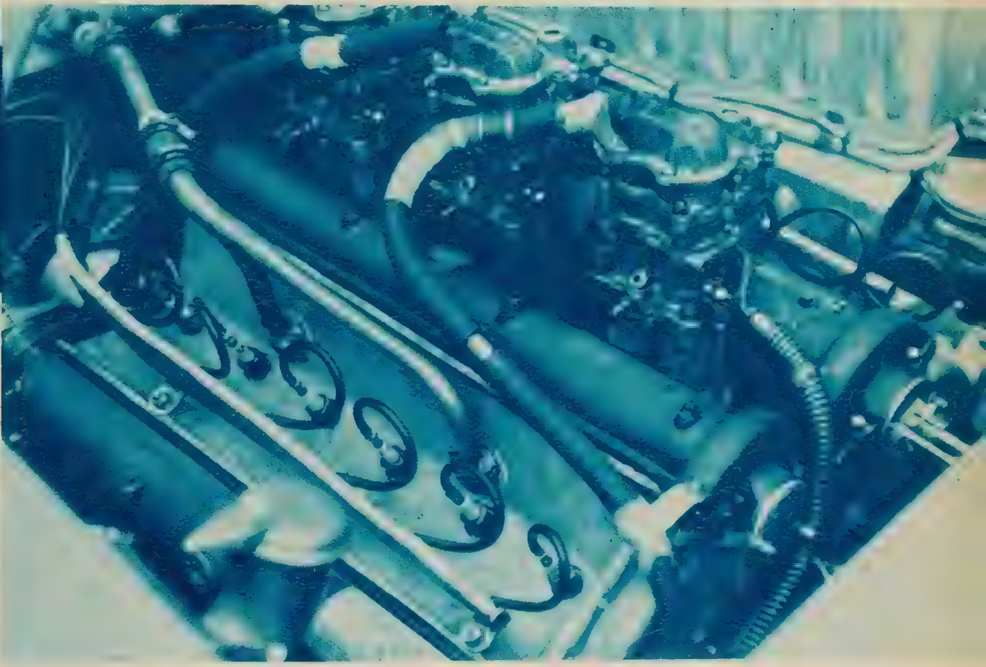
This type owes its origin to the race car in which Nuvolari won the Vanderbilt Cup before the war. Alfa Romeo built just two of this model in 1939. Now its chassis is several pounds lighter while the body is a brand new Vignale creation.

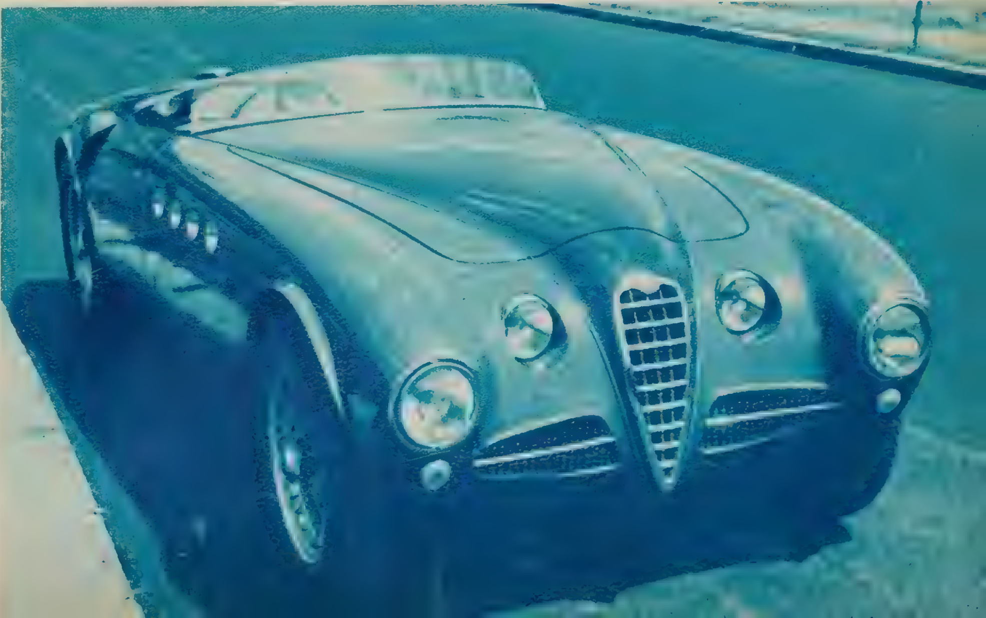
The front and rear suspension are independent, with the differential fixed to the chassis and the transmission joined to the differential. Large diameter brakes.

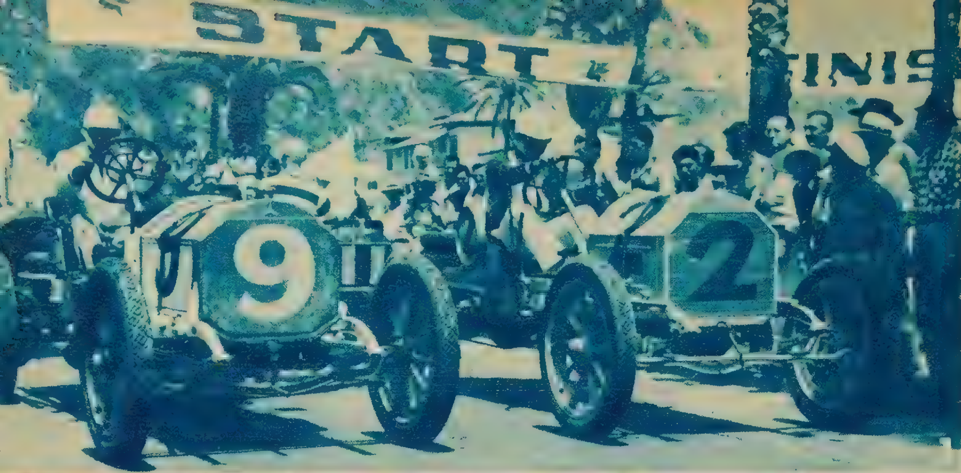
Before it had been remodeled, Bonetto won the 1950 Oporto G.P. in this car. In the Mille Miglia of the same year, for 700 km he led Fangio, who was driving an experimental Alfa Romeo type 1950. This year, Bonetto, in the same car, placed 6th at the Mille Miglia. After that race, the chassis and engine were modified and the body painted. It weighs 2333 pounds, which gives a weight/power ratio of 10 lb/hp. Top speed is 142.6 mph.

Specifications

No. cylinders	V-12
Bore	73.5 mm
Stroke	88 mm
Displacement	4500 cc
Compression ratio	8.31 : 1
Horsepower	230 @ 6000 rpm
Camshafts	4 overhead
Carburetors	3 Weber (size 36)







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OLD TIMERS AT CATALINA

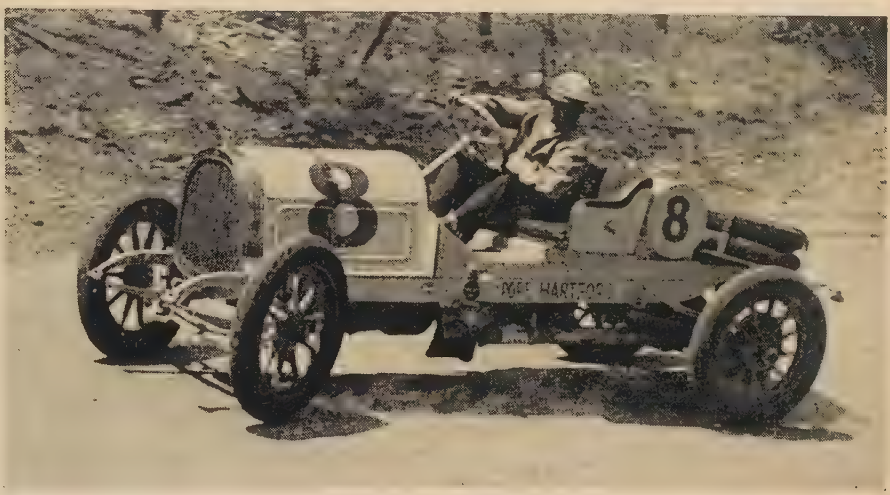
It seemed strange, putting out to sea en route to a mountain road race. Catalina Island (28 mi. off California coast at Los Angeles) is all mountain and this particular race, sponsored by General Petroleum (Mobiloil), was to run from Avalon to "The Isthmus" and return . . . one of the twistiest up-and-down roads in the United States . . . switchbacks, loops, hairpins, and sheer cliffs.

M.C.ed by starter Ralph de Palma, six old timers from the Lindley Bothwell stables lined up on Avalon's "boardwalk" for the start. Running against time, a five-minute interval spaced the exciting smoke-and-noise getaways of the "racin' machines." Dust boiled up as the big engined monsters toured their way up perilous trails that would make a mountain goat dizzy.

Twenty-seven twisting miles later the thundering herd arrived at "The Isthmus," Lindley Bothwell having made the distance in the amazing time of 42 min. 37 sec. Only Jesus Chavez exceeded an hour, having run the Mercedes down the wrong trail.

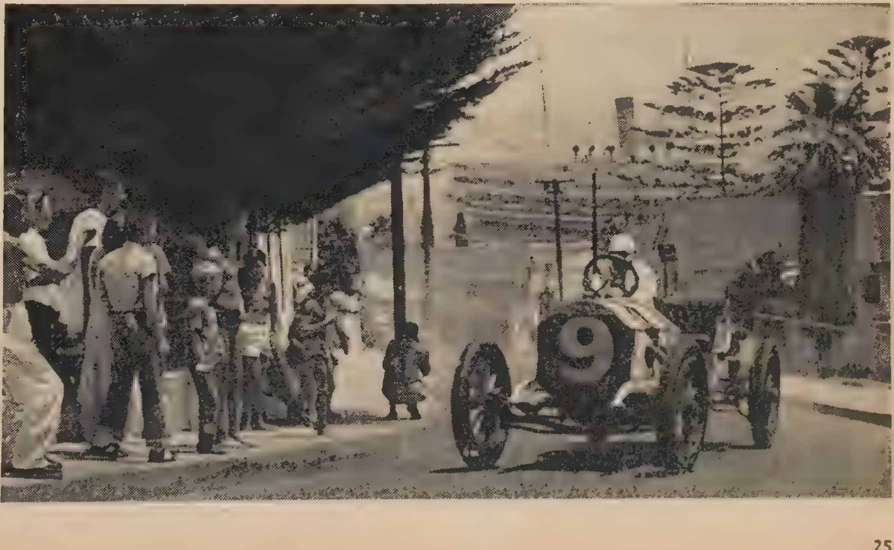
After an overnite rest, the return trip was started. A large crowd of spectators at Avalon enthusiastically welcomed the cars as they wearily, but proudly, crossed the finish line. Lindley Bothwell, first; Rosenthal, second; and Anholt, third. The citizenry were amazed at the speed with which the mountain roads had been negotiated. Mechanical difficulties beset the Cadillac and the Mercedes . . . both were towed in.

Bothwell, Catalina, Mobiloil, tourists, and P. K. Wrigley were all pleased so this fine event has now been established as an annual fixture.



Top, Rosenthal, in Simplex, approaches "The Isthmus." Above, Bothwell in Pope-Hartford.

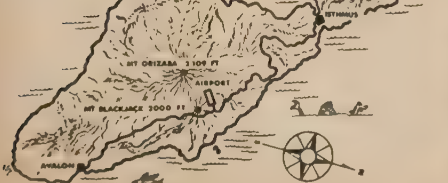
Above, Edwards, in 1914 Ford "Spider," leads tag circle in Avalon. Below, Chavez roars up hill.



Photos on page opposite

1. Chavez in #9 Mercedes (1908) and Koehle in #2 Cadillac (1912) lead off.
2. Bothwell raises dust as he storms up hill.
3. Ralph de Palma, official AAA starter, congratulates the winner, Lindley Bothwell.
4. Walt Rosenthal speeds by in 1910 Simplex.
5. During practice, Bothwell, in #8 Pope-Hartford, takes inside turn as Anholt, #4 Benz (1908), goes wide on dusty road.
6. Bothwell rounds turn as he leaves Avalon and begins 1700-foot climb to mountain.
7. Chavez in Mercedes is trailed by Simplex.

PHOTOS BY CAMPBELL & CHESEBROUGH



Steering Phenomena . . .

"Steering Offset"

This is another of the many items in motor car design and manufacture which call for compromise, tho the position is not so clear cut as it is in the case of steering "sponge." At one time no great effort was required on the part of the designer to obtain either center-point or near center-point steering, but with the passing of the years a process of crowding has taken place which has tended to increase the distance between the point where the steering or kingpin axis met the ground and the point where the geographical center of the ever-increasing contact area between tire and road lived and moved and had its being. Front wheel brakes, fatter tires, smaller diameter and wider rims, have all done their bit, the first directly, the latter two more by their dictation of the position of the steering ball joint and consequent fixing of the steering axis position, if anything remotely resembling correct Ackermann effect was to be obtained. In all fairness it must be said that dished bolt-on wheels have lessened the mechanical problems connected with reducing the offset of the contact point.

The adverse influences listed above more than outweigh this, especially when to them is added the influence of the forward engine position, which has resulted in lower cross steering tubes; for as the cross steering tube is lowered, its ends tend to move down parallel to the pivot axis for a given Ackermann effect, and so to approach closer to the wheel center plane or, if this is not possible, to push the wheel center plane further away from the steering axis.

Why is near center-point desirable, and what, in present-day conditions, can be done to help to obtain it?

Briefly, it is desirable because it reduces the swerve of the car and steering pull, due to unequal tiregrip when braking: it gives slightly lighter steering on corners, and reduces the stresses in the steering ball pins and tube due to braking loads. The reasons for the first and last are obvious; the lighter steering on a corner is due to the increased rolling resistance of the outer wheel (carrying more load), while the tire is drifting sideways due to the cornering load, and the less distance from the steering pivot the less the torque exerted about this pivot by this difference in resistance.

Road bumps have a moment arm about the steering axis which is not the offset at the ground but the offset at the wheel center line (since the wheel rotates freely around its axis), so that the influence of the dimension we are discussing is indirect only, and cars with similar offsets at the ground may react quite differently to road bumps.

Helps towards obtaining a small offset at the ground are: increased sideways lean of the steering pivot and the front wheels (the latter limited by considerations of even tire wear), taking advantage of the use of dished bolt-on wheels to push the brake assembly further into the wheel (and facing up to the problem of cooling the brakes, on a high performance car at least), trying to get the steering linkage reasonably high off the ground and laid out so that it does not require the ball pin pushing too near the wheel center plane to get reasonable steering angles on both wheels. It may help to put the steering linkage in front of the wheels, but this usually means staking a claim for it early in the suspension design; it does not help in itself with an axle as opposed to independent front suspension.

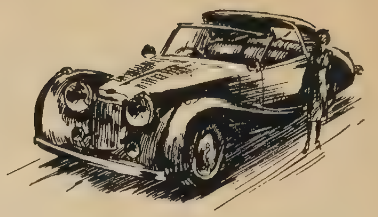
"Sponge" and "Joggles"

The art of motor car design is compromise, a striking of the balance between conflicting requirements. One example of this occurs in deciding how much elasticity or "sponge" to provide in the steering linkage. This elasticity is commonly measured by clamping the steering wheel, applying equal steering torques to each of the road wheels, and measuring the deflection of each wheel. From these measurements the elasticity of the steering system, in terms of applied torque per degree of steering angle of the road wheels, is obtained. The elasticity of the steering system is derived from a number of sources: bending of cranked tie-rods and drag-links, "give" in kick shackles and cushion-type drag links (where these are fitted), bending of steering levers, deflection of steering box mountings, and flexibility between axle and frame or in independent front wheel suspension systems.

An elastic steering linkage, i.e., one in which a relatively low applied torque is required to produce one degree of steering angle of the road wheels, is useful for reducing the road shock or "joggles" which the driver feels at the steering wheel rim. This can best be explained by considering that such road shocks are produced by a given force acting on the inertia of the moving parts for a given time. There is obviously a maximum deflection of the road wheels which can be obtained in such conditions, and the maximum torque which can appear at the steering wheel is this deflection, multiplied by the elasticity figure, divided by the steering ratio and multiplied by the reverse efficiency of the steering system.

Unfortunately, however, this elasticity in the steering linkage also increases the tendency to low-speed wobble, as mentioned in the fifth of these articles (September, 1951), and also decreases the feeling of mastery of the driver over control of the front road wheels: he feels that these are "remote" and do not accurately respond to the instructions he gives them thru the steering wheel, and that on occasions they also take the law into their own hands and do things which he neither intended nor wanted them to do. Both these tendencies—to low-speed wobble and to "remoteness"—are obviously undesirable and should not be encouraged. The designer or the experimental engineer must therefore strike a compromise, and fix the elasticity of the steering linkage at a figure which is satisfactory from the aspect of wobble and control but does not give rise to too much fidgeting of the steering wheel. In some cases the compromise is unsatisfactory from all angles.

When this is the case improvement is to be sought by reducing the tendency to low-speed wobble, by one of the methods suggested in the first of these articles referred to above, or by reducing the causes of road shocks or "joggles"; These are usually due principally to gyroscopic action of the front road wheels, and by reducing this gyroscopic action, as for instance by fitting a form of independent front suspension which reduces the angle of tilt of the wheel for a given displacement from the normal position, the designer can give himself a greater freedom of choice in the range over which a satisfactory compromise in the amount of steering linkage elasticity is possible.



Caster Angle and "Pay Back"

Most drivers are so accustomed to a car wanting to run straight and to straighten itself out after a curve that they do not bother to think what causes this phenomenon. If they do bother to think they just say "caster angle" and leave it at that.

In actual fact a number of causes are responsible for the front wheels behaving in this way. Caster angle or more correctly caster offset, is one of these causes and everyone knows what that is and how it works. What are the others?

First is the property of the front tires called "precessional torque" by R. D. Evans in his 1935 American Society of Automotive Engineers paper. If a side load is applied to a car wheel running along a road it drifts sideways and its path makes an angle to the direction in which it is continuing to point, just as a side wind acting on its sails causes a boat to make leeway. This tendency in a boat is resisted by the keel or by leeboards, and if these are towards the back end of the boat it tries to run away from the wind. The way in which a tire resists the tendency to sideways drift means that its "keel" is always behind the center of its contact area on the ground and this tries to straighten the wheel out—to make it run away from the centrifugal force acting on it on a corner which is like the wind acting on the boat. The position of the "keel" on the tire varies with the amount of sideways drift, the more the drift the nearer the "keel" moves to the center of the tire contact area. This effect is much more powerful than caster angle proper and at small sideways drift angles can be equivalent to about 10° of caster angle.

Next is the increase in tire rolling resistance which occurs when the tire is drifting sideways as described above, under the influence of a sideways load, coupled with the fact that the outer front wheel on a corner carries more load than the inner and that center-point steering is today practically unknown. The preponderance of load on the outer wheel means that its rolling resistance is greater than that of the inner wheel and this increased resistance, acting at a point outside the steering pivot axis of the wheel, tries to reduce the steering angle of the front wheels and so to straighten the car out. This effect is much less powerful than the precessional torque. Last and least important is the effect of the sideways lean of the wheel steering pivots which, in conjunction with out-of-center-point steering, slightly lifts the front end of the car when the wheels are turned from the straight ahead position. The desire of the car front end to drop back to its original position has a slight straightening effect on the front wheels.

This is the sixth of a series of articles reprinted by courtesy of Thompson Automotive Products Co., Leamington Spa, England, makers of the Thompson Self-adjusting Steering Rod Assembly.

TECHNICAL CORRESPONDENCE

CADILLAC ENGINE IN CORD

I am an enthusiastic owner of a two place, supercharged 812 Cord and the only fly in an otherwise satisfactory ointment is the transmission, with which I have had hundreds of dollars worth of troubles.

Would it be practical to install a complete Cadillac engine and transmission assembly with the transmission between the differential and the engine?

New York, N.Y. Enoch Sharp

Assuming you wish to retain F.W.D., I can see no way out that will eliminate the necessity of lengthening wheelbase. This means extra cost of reworking and lengthening the hood and sub-frame.

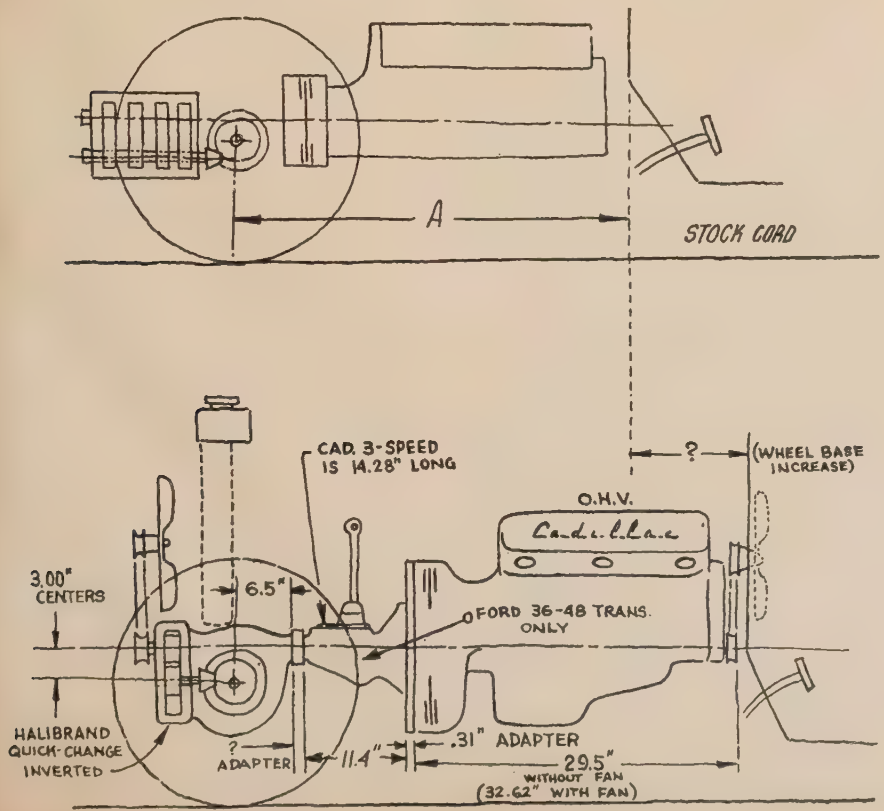
The sketch shows one method, making every effort to keep length down. The inverted Halibrand center section uses '35 to '48 gears. A Ford transmission (shown) saves a little over 2½ inches in length over Cadillac 3-speed. Also, Cadillac unit would require a Buick 60 or 70 output shaft. Adapter shown is available from McBar or Frick-Tappet—I'm guessing at its thickness.

Using the Halibrand center section requires special side plates to provide covers, and special stub shafts to carry the power from the differential out to each inboard U joint. Halibrand has made these for independent rear suspension race cars.

Lengthening the Cord sub-frame should be easy enough, but I would provide some substantial diagonal struts to insure better than original rigidity there.

As an alternative to the Halibrand, use Cord case but retain only the 4th speed set of gears. This eliminates the Halibrand cost and adaption problems, but sets up a new problem of attachment between the Cord clutch housing and the 3-speed conventional transmission (gives only a 2.75 final drive ratio . . other gears maybe?). Or, perhaps you could keep the 3rd and 4th speeds for the equivalent of a 2-speed axle. Russ Sceli has a manual shift kit for the Cord.

Not being a F.W.D. fan myself, I'd probably convert to rear drive in order to retain stock appearance, and also to gain the added traction due to weight transfer on fast acceleration. If you will consider this expedient, consider also the advantages of a deDion system, possibly made from Allard J-2 parts but with wider tread. The deDion is the best, and you will require a much more modest tunnel size, except for the transmission.—Tech. Ed.



WAR SURPLUS BLOWER FOR $16.95

There is a war surplus agency that sells a Borg - Warner supercharger for $16.95 [Enclosed adv. says, "26 cfm at 4" Hg at 3000 rpm"]

I own a 1949 Chevrolet and would like to hop it up by supercharging to a moderate degree . . . is it the right capacity for my car?

Scranton, Pa. Martin Lydon, Jr.

A rough rule to determine the size supercharger needed is as follows:

$$\frac{\text{Displacement x rpm}}{2 \text{ x } 1728}$$

For the Chevrolet at 3000 rpm, we have:

$$\frac{216.5 \text{ x } 3000}{2 \text{ x } 1728} = 188 \text{ cubic ft. per min.}$$

The displacement is divided by 2 for the 4 cycle engine and the 1728 converts cu in. to cu ft. Actually, you need an excess of air to ensure pressurizing and 25 to 40% excess is not unusual. 4" Hg is only 2 psi, and even 6 psi is considered a low boost.

So you can see that it would take at least 7 of these little Borg Warner blowers to do the job! If you will check the 7½ x 7 x 5 outside dimensions given, against the "photo" in the ad you can readily see that something is phoney. Sorry!—Tech. Ed.

GRAY "FIREBALL"—KAISER CORRECTION

In reference to your mention of the 225 cu in. Gray FIREBALL Racing engine, published on page 13 of your June issue, we are writing to correct the statement that this [Gray Fireball] is essentially the same block as the Kaiser-Frazer 226.

You apparently assumed that the two were from the same pattern, but if you will refer to the data, you will observe that our 225 cu in. FIREBALL Racing engine was from Continental's "A" Series, while the K-F 226 is from the Continental "F" series. The two are entirely separate designs, and the camshaft made for the "A" Series would not fit an "F" series engine.

We discontinued the 225 cu in. size of the FIREBALL Racing engine when the American Power Boat Association increased the limit of piston displacement in the 225 hydroplane class to 255 cu in., and later to 266 cu in., to accommodate the Mercury and other conversions, however, we still supply the FIREBALL Racing engine in the 244 cu in. size, which is also based upon the Continental "A" Series.

Detroit, Michigan R. H. Mitten
Gray Marine

REPOWERING LINCOLN CONTINENTAL

In reply to dozens of letters requesting a solution to the problem of replacing the V-12 engine of the Lincoln Continental with a more modern and satisfactory powerplant, the following reply was sent:

In answer to your letter requesting suggestions on re-powering your Lincoln Continental, there are a number of possibilities. I have personally observed installations using the Ford 6, Ford-Merc V-8, the 337 cu in. Lincoln V-8, the L-head Cadillac V-8, and the new ohv Cadillac V-8. Other reasonable possibilities are the Olds V-8, the 270 cu in. GMC truck engine, or the new "Ardun-Cadillac" (Chrysler V-8).

Taking these in order, the first two are the cheapest, and the better torque of the Ford 6 makes it preferable to the Ford V-8 where top speed is not too important. Either gives acceleration about equal to the original V-12, and giving the Ford-Merc V-8 a bore and stroke of 3-5/16 x 4, makes probably the best all-around conversion for nearly the lowest cost. I personally do not like either of the two big "flat head" V-8's (Cad and Lincoln). They are OK but do add weight, are more difficult to install, and require the engine maker's transmission.

The ohv Cadillac V-8 is a very good choice, saves a little weight, and the necessary conversion parts for joining the Cadillac clutch to the Lincoln transmission are available. The Lincoln transmission won't stand as much gaff as the Cadillac, but is OK if driven reasonably. However, the installed cost will be at least $800, and can easily run to $1000.

The Olds V-8 is nearly as good as the ohv Cadillac, but no conversion parts are available. You can adapt the Olds manual transmission using Buick "60" torque tube "ball" parts and reworking the Lincoln torque tube ball and U-joint to fit. This can also be done to any of the Cadillac manual transmissions, since the 3-speed trans. fitted to '36-'50 Cads, '36-'47 Buicks 60 and 70, and Olds V-8's have the same basic design with many interchangeable parts.

The new Chrysler V-8 seems about the ultimate in available powerplants, and adapter kits are now available from McBar.

The 270 GMC seems to offer a most attractive proposition. An adapter unit, which allows the Lincoln transmission to be attached to the "Jimmy" engine, is now available.

Intake manifolds are available for the necessary side draft carburetors. The Feb. '51 issue of Road and Track has ideas for further development of this installation.

One basic fault of several of these suggestions is propelling a rather heavy car with a much higher torque engine thru a gearbox originally designed for the 221 cu in. Ford V-8. (Ford and V-12 Lincoln gear cases are identical) The Lincoln gears will not prove satisfactory if the transmission is used hard and often. On the other hand, Fordillacs and Cad Allards are satisfactory because their light rear ends readily give wheelspin, which thus limits the maximum engine torque put thru the gears . . . substantially less then what the big engine is capable of producing.

However, driven with due regard for this situation, no trouble should be experienced.—Tech. Ed.

MILLING PONTIAC 8 HEAD

I have a '50 Pontiac 8 with a standard 6.5:1 head. Would like to raise the compression to 7:1—how much would the present head have to be milled? I don't want a speed job . . . . just better mileage.

Aberdeen Proving Ground, Maryland
Major B. T. Cook

If you mill .060 off the head of your Pontiac 8 you will increase the compression ratio from 6.5 to 7.0 to 1 which is exactly what you want.—Tech. Ed.

HOPPING UP AN MG

I am contemplating the purchase of an MG. I would like to know the best method of hopping it up to 95-100 mph. How does the MG stack up against the Detroit buggy for pickup? High speed?

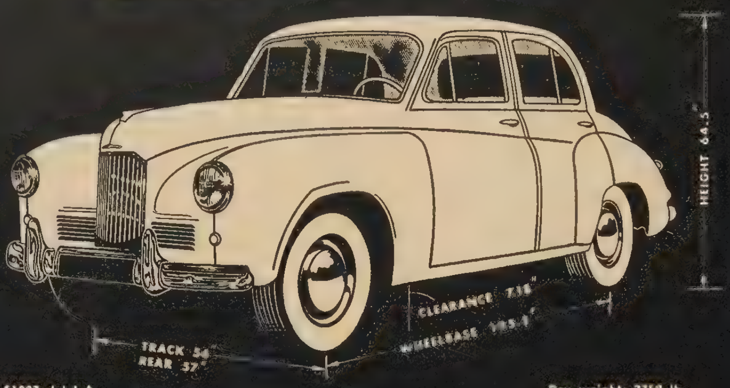
c/o FPO, New York, N.Y.
H. W. Louderback, ET3

The best method of hopping up an MG is to add a supercharger to the stock model, or buy the Mark II model. Either method will give a standing ¼ mile time of around 20 seconds, a little better than the average American car, but not as good as some of the faster ones. The top speed will be roughly 90 mph, which again is better than the average American. I would not recommend going any further on hopping up an MG unless you want it solely for competition purposes.—Tech. Ed.

(Continued on page 30)

ROAD and TRACK ROAD TEST No. F-8-51

Make: Humber **Model: Hawk**



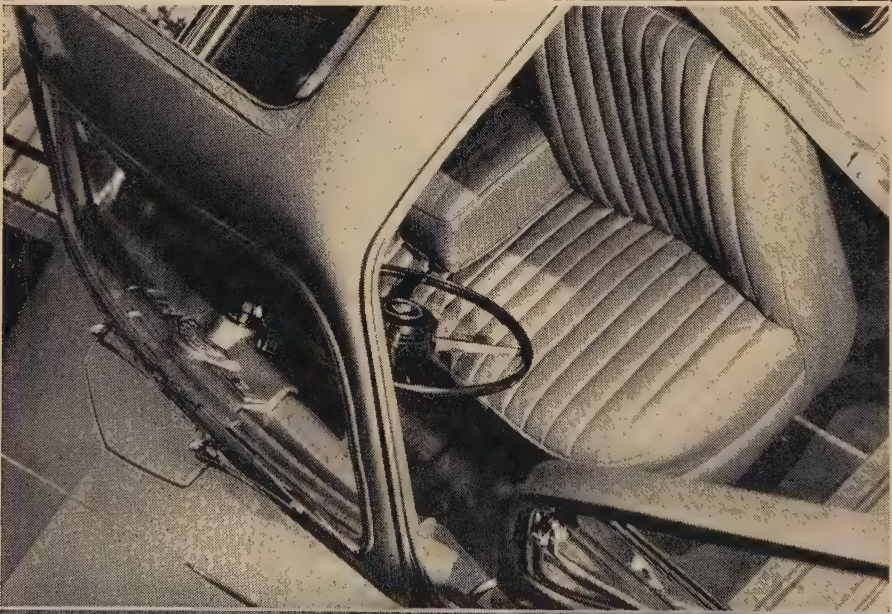
Price $1997 del L.A.
Horsepower: 58 at 3400 rpm
Displacement: 138.2 cu in. (2267 cc)
Bore: 3.187 in. (81 mm)
Stroke: 4.33 in. (110 mm)

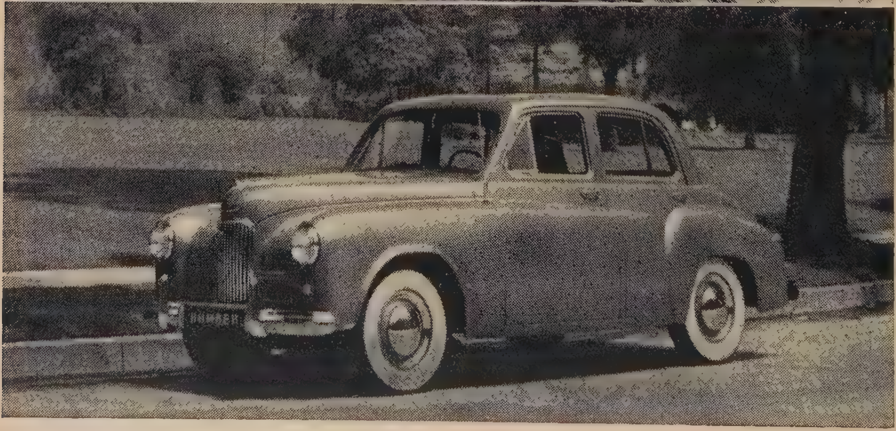
Dry weight: 2758 lb
Overall length: 174 in.
Overall width: 70.8 in.
Front seat width: 49 in.
Rear seat width: 49 in.

CALDWELL

PERFORMANCE

ACCELERATION		MAX. SPEED	
		Flying ¼ mile	
Standing ¼ mile	26.0 sec.	Upwind	68.7 mph
0-50 mph	18.2 sec.	Downwind	75.6 mph
0-60 mph	27.9 sec.	Average	72.2 mph
10-60 mph (4th gear)	30.1 sec.		





HUMBER HAWK RATES HIGH AS FAMILY SEDAN

The Humber may not be a hawk—if you take "Hawk" as meaning a slashing, tearing bird of prey—but it isn't exactly a cooing dove, either. What it actually amounts to is a compact, yet roomy family sedan, capable of a reasonable cruising speed on the highway, and an exceptionally maneuverable car in town.

Quite frankly, *Road and Track* was disappointed in the Humber Hawk when it was turned over to the testing staff. The car didn't fall short in the above listed attributes, but it did fail to come up to top speed and acceleration expectations. After running the complete tests, the car was returned to Peter Satori's Beverly Hills showroom. Mr. Satori was even more confused by the results than we were.

"I *know* this car will do better than your figures indicate," and he asked his sales manager Randy Hall to have the car thoroly checked in the shop.

When it turned out that the throttle linkage had been restricted all thru the tests, *Road and Track* took off again for the testing ground, with the Humber nicely humming.

The only reason these road tests are run is to allow the prospective purchaser to get a reasonable insight into what he contemplates buying. On this basis, the Humber seems like a good buy. The seats are definitely as comfortable as any car on the market. The Rootes group, makers of Humber, Hillman, and Sunbeam, have succeeded in producing a bench type seat which gives both the driver and passenger a feeling of lateral stability. Altho they do not look it, the seats are actually curved into a semi-bucket contour and upholstered in a most attractive leather. Both front and rear seats have a well-designed folding arm rest in the center and the instrument panel is functional and attractive in typical Rootes fashion. One fairly serious objection was the reflection of the instrument lighting upon the curved windshield, a shortcoming which could be corrected by the addition of a small metal shield placed over the instrument panel.

The Hawk is not a sports car in any sense of the word—steering being much too slow and the ride too soft for really rapid cornering. However, during the tests (as with the Austin) cornering was vastly improved by the simple expedient of an extra five pounds of air in the rear tires.

The steering as compared to most American cars is good, but there are British imports which have more accuracy. Once again, one must remind himself the Humber is not a sports car and the woman in the family will be grateful for the high ratio when parking. She, too, will appreciate the sliding roof which allows some of the advantages of a convertible without the obvious disadvantages.

Opinions differed as to the appearance of the car. It is a good clean design, rather typical of the Rootes line. One could quite fairly call the Humber a "big Hillman"—in fact, most people do.

Summing up the Humber Hawk, it is an excellent car for the family trade, compact and yet avoiding the stigma of small cars for those who are prejudiced against them—roomy without the bulk associated with most five-six passenger cars. The exceptionally quiet (for a four cylinder) engine is capable of hauling the car thru traffic admirably, and service presents no great problem—more and more Rootes sales rooms are springing up all the time.

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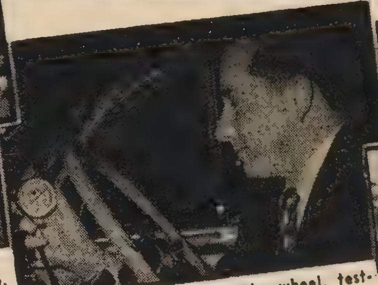
This test is in no way an endorsement of the Chevrolet by Gale Hall Engineering.

Measuring gasoline. Note native assistant.

Over the river. Monkey invades scene.

Down a grade. Over the mountain.

End of run. Checking the grade.


W. J. O'Hagan Ward, at the wheel, testing the "Mile-O-Meter".

Primitives stand for photography. Monkey makes friends.

W. J. O'Hagan Ward reports the test of the "Mile-O-Meter" over a test circuit of 24.8 miles. A standard stock '48 Chevrolet does 29.6 Miles Per Gallon with "Mile-O-Meter".

Driven by A. L. Page of A. W. Hawkins Co. of Johannesburg, South Africa, and Sydney, Australia. Mr. Page, an expert driver, runs course in 32 minutes and 10 seconds, without "Mile-O-Meter", and gets 22.5 M.P.G. Then drives the course with "Mile-O-Meter", in 32 minutes and 40 seconds and continues on for 7.1 miles before the gallon of gasoline is exhausted!

The test was conducted on unpaved roads, through jungle swamp, over water covered roads, up to 6,000 ft. above sea level, over carefully measured course.

A. L. Page drove the Chevrolet with ONLY one gallon of gasoline, with the "Mile-O-Meter", to a record mileage of 29.6 M.P.G. In Africa, where heat reaches 130° in the shade, and where the humidity is wilting, "Mile-O-Meter" proved its worth.

INSTALL THE MILE-O-METER

(Reg. U.S. Pat. Off. [illegible] Copyrights and Patents Secured)

miles per gallon and motor tune-up gauge

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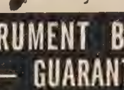
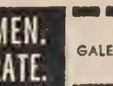

TEACHES you how to drive economically — eliminates the Jack Rabbit starts and passing on hills — that's where you really drink up fuel.


YOU can check your engine condition at all times, and if it is not operating efficiently, Mile-O-Meter will tell you how to correct the condition.

Map shows course measured in South Africa

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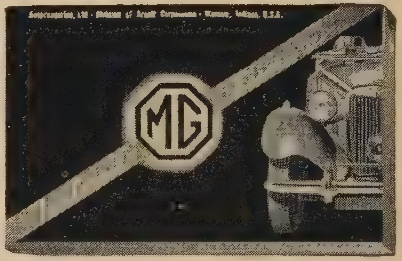

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TECHNICAL CORRESPONDENCE

(Continued from page 27)

LARGER ENGINE IN SIMCA 8

The Simca is undoubtedly one of the best examples of Italian styling and is extremely well constructed. All that is needed to make it a first class sports car is more power.

Since the addition of speed equipment would stress the engine, with resultant loss of durability, it would seem that installation of a different engine would be advisable.

Would the Simca take a Ford "60" or a slightly detuned Offenhauser 102 cu in. engine? Which of these, or what other engine, do you believe would turn the Simca into an acceptable sports car without loss of all its practicality?

What changes would be necessary to accommodate the engine you suggest?

Los Angeles, Calif. Robert W. Cumberford

The Ford 60 or an Offenhauser Midget engine would make a real performance automobile out of the Simca but either possibility involves very extensive changes as well as considerable cost. A nice compromise would be the new Fiat 1400 engine modified with speed equipment already being advertised in Italian magazines. Other possibilities are the 1508 cc Ford ohv Consul engine (destroked to 1495 cc) or the Standard Vanguard 2088 cc (with new sleeves and pistons to reduce displacement to just under 2 litres).

Regardless of engine selected it is usually much easier to use the same make and model clutch and gearbox.

The cost of anyone of these proposals added to the high original cost of the Simca makes competition racing rather expensive. Also, the car is slightly heavy.—Tech. Ed.

CORRECTION TO MG TD MARK 2 SPECS.

There seems to be a bit of confusion on the many changes in the Mark II MG TD. I have it in letter form from Nuffield Exports that the following changes have been made:

Larger S.U. Carburetors; 150 lb valve springs with oversize valves (exhaust valves are sodium cooled).

Compression ratio is not 9.3 to 1 but in fact is 8.6 to 1. Thrust springs on rocker are replaced by distance tubes of steel leaving .003 to .005 end float—less friction. Lucas Sports Coil is used; rear end ratio is 4.875 to 1.

Plugs are L.11S but you may, for ordinary road work, use L 10S. Gaps should be set between .018 - .022. Distributor gap should be set at .012. Timing at top dead center. For maximum power tappets should be set at .025, however, you may use .022 or .019 with loss up to 2 bhp if you wish less noise.

Four Andrex shock absorbers are added to the existing four Girlings already on the regular TD.

An additional fuel pump is used to make for certainty at high speeds where vibrations might otherwise result in irregular performance.

Thermostat is removed entirely.

I am also informed that in the usual temperature ranges of the East we may use SAE 30 oil in summer and SAE 20 or 10 when it is very cold (below zero for SAE 10).

In England, the cars are not fitted with the oil bath filter. For maximum speed remove the filter. If you are having trouble with air restriction on the Mark II bore out the aluminum branch pipes to same size as flange port on carburetors. You may also (yes even some of the regular TD cars) have trouble with air restriction if you tighten down the air filter to the point where you bend the small metal legs on the bottom of the filter element. Bend them up so as to raise the top part of the unit and then do not screw down too tightly.

In fall, use a thermostat for normal road work. No advantage in replacing the Burgess silencer with a straight-thru except noise and seeming speed! Do not close the breathing hole on the Arnolt Aluminum Cover . . . use a tube to take it down beneath car but allow some breathing as it is the only place where breathing may take place! This I have it, is a must if you are to avoid trouble. Wheels on latest cars are drilled for brake adjustments. Front wheels have grease caps to prevent throwing of grease at high speeds.

Hartford, Conn. David L. Goldberg

V-16 SPORTS CAR

I am thinking of building a sports car out of a V-16 Caddy engine . . . Could an Auburn 2-speed rear axle be used?

Pomona, California. John Wininger

I suppose you can make some sort of a sports car around one of the V-16 Cadillac engines but I don't advise it. If you must have a V-16, then get one of the V-16 ohv Marmon engines. These were all aluminum, developed 200 bhp stock, and only weighed close to 1000 pounds! If you still insist on a Cadillac, the later 135° V-16 is perhaps the best because of its square bore and stroke—3¼ x 3¼ (the ohv Cad V-16 was 3 x 4, the Marmon 3⅛ x 4).

There is absolutely nothing available for hopping up these engines, and if you do mill the heads, port and relieve, etc., where will you find a transmission to take all this power, or an axle? The Auburn 2-speed axle is really heavy and well built, yet I'd hesitate to put even 200 bhp thru it, and an overdrive . . . . it wouldn't last more than 5 minutes.

Now I'm sorry to be so discouraging, but if you really want to build a nice sports car, it should be small and nimble, not big and heavy. Top speed is mostly a function of the bhp divided by the frontal area in sq. ft. Keep the sq. ft. down and you have the speed . . . . it's a nice problem in design.—Tech. Ed.

V-8 IN HUPP 527 T

I own a 1935 Hupmobile coupe, 8 cylinder model 527 T. The body is in excellent condition. For a long while I have considered replacing the power plant with something that might be easier to service without laying the car up for several weeks at a time. I also own a 1936 Cad Series 70, V-8, 135 hp . . . would it be adaptable to the Hupp?

If you will recall, Hupp had an almost continental appearance in the treatment of the front grille, slope of fenders, and headlamps that were built into the hood.

Perhaps I might be fortunate to hear from other Hupp owners. Mine is the only coupe of this type in the Washington-Baltimore area.

Annandale, Va. Jackson Bryan

I remember your model Hupmobile very well, and incidentally, the later Opel from Germany was a cold steal from this design.

Take measurements of both cars to see if the Cadillac engine will go into the Hupp. Watch especially for steering column clearance. You will have to use the Cadillac clutch and transmission.

It will be a lot of work: cooling hose connections, clutch controls, engine mounts, drive shaft length and connections, throttle hook-up, wiring, exhaust connections, etc., are all problems to be solved. But, if there is room for the V-8, I can foresee nothing that cannot be worked out and I am sure that you would have an even better performing car, one that should easily last another 15 years.—Tech. Ed.

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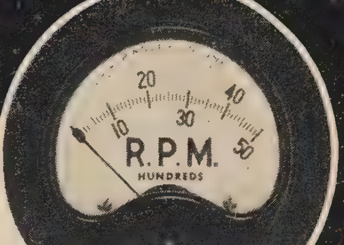

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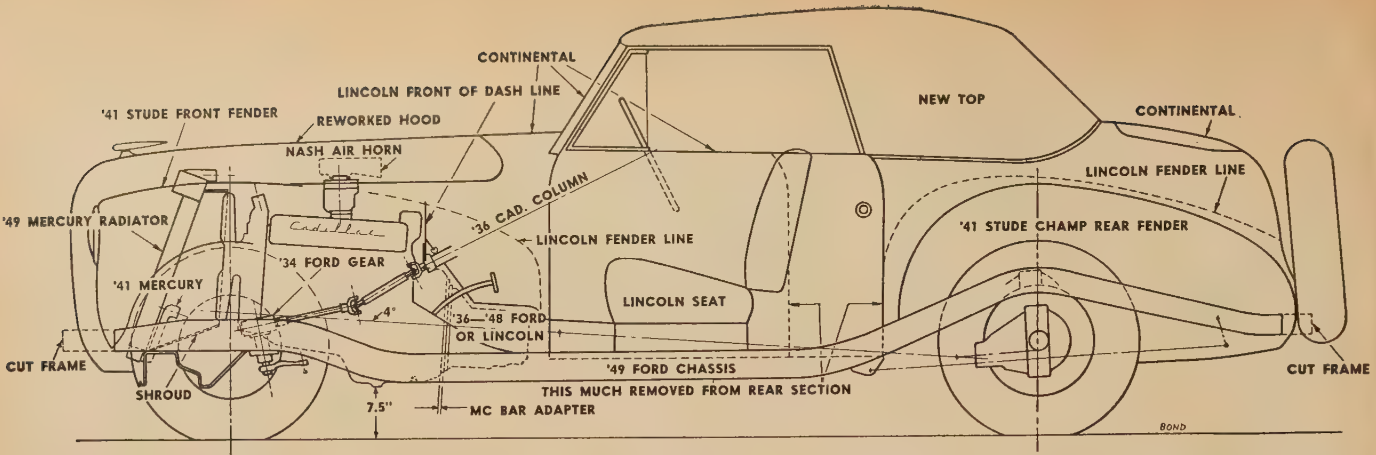


Building a Cadillac-Ford Continental

by John R. Bond

The late Lincoln Continental was one of the most beautiful designs ever fitted to an American chassis. It rivals the best Europe has ever offered, and as time passes, its popularity continues to increase.

Because of the large volume of correspondence expressing interest in the Continental, we chose this design as the basis of a home-grown custom special.

There are several reasons for not just picking up a Lincoln Continental at the corner used car lot and letting it go at that. In the first place, a good Continental is a scarce item nowadays. Then, too, you are probably looking for high performance . . . so why not consider a more modern chassis, incorporating independent front suspension, and in a somewhat smaller package. The reduced size saves weight, and the i.f.s. will restore the comfort found in the 125-inch wheelbase Lincoln.

Let's concentrate on the 1949-50-51 Ford chassis for this project. You can use any chassis you choose, but I like the 114" w.b. Ford. There are a lot of them running around and it shouldn't be too hard to find a bargain in a "total" wreck which has the chassis in good shape.

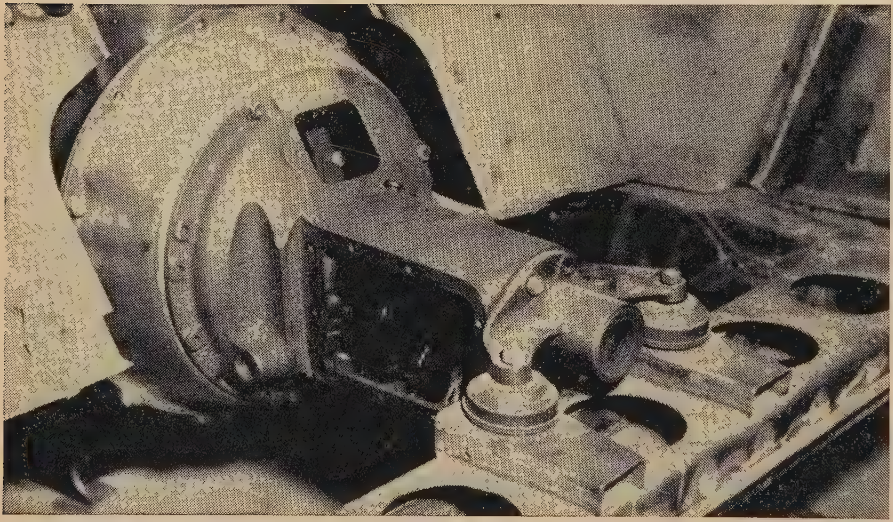
The same thing applies to the Cadillac engine. Any engine from a stock Ford to an ohv Chrysler will do and you've a perfect right to exercise your individuality, but the Cadillac is available, puts out great torque, and can be modified extensively with very little trouble.

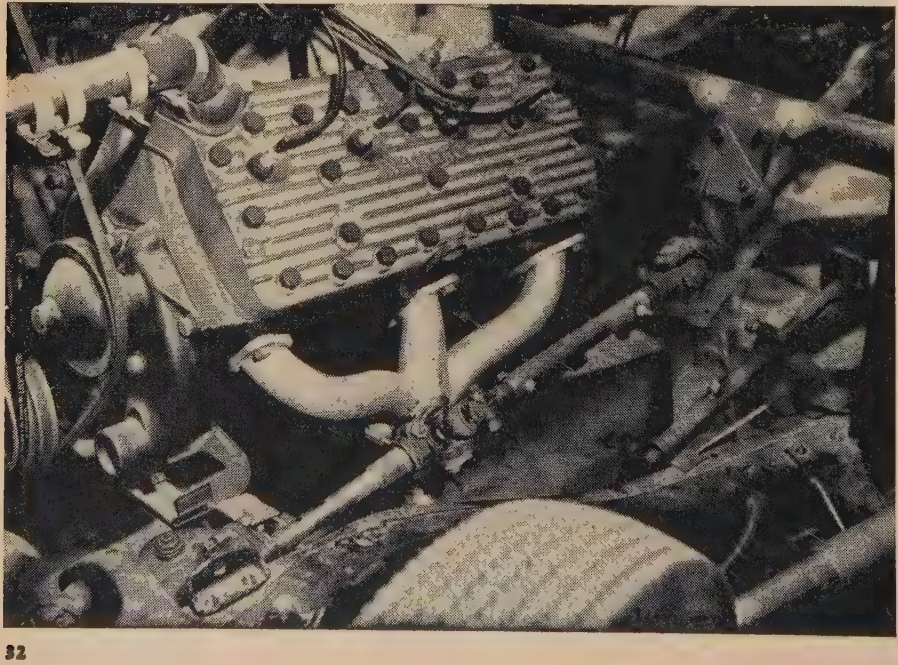
You'll notice that the engine in the drawing is moved back into the chassis for better handling characteristics. Cross member #2 (the one bolted in place) is removed and a new box section member made up to form the rear engine mount (as shown). The 1939 Ford transmission bolts to the rear of the Cadillac bell housing with the aid of a 5/16" thick plate and a clutch pilot bearing adapter, available from several sources. Front engine mounts are easily devised and are welded to the frame.

The photograph above shows how quicker steering can be incorporated in this chassis. The gear housing is a reworked 13 to 1 ratio from a 1934 Ford. The universal joints and column are from a 1937 Cadillac 75. The steering gear bracket sits at a cockeyed angle to maintain the steering arm ball (and stock '49 arm) in its *exact, original geometric* relation. This bracket must be of at least ⅛" steel, well gusseted, and arc welded all around for rigidity. This set-up gives exactly 3 turns from lock to lock instead of the stock Ford 4½ turns. The '49 Ford 17.8 to 1 ratio gear can be retained, using the same universal joint arrangement to get the steering wheel in its proper place. The stock '49 drive shaft is shortened and rebalanced, which is fairly simple compared to shortening a torque tube drive.

Everything we've tackled so far is not too difficult, but now we come to the body which is always the big stumbling block. To keep our costs down, we scrounge around until we find a Lincoln Continental cowl and windshield assembly, and two doors in repairable

(Continued on page 36)





Top, a new fabricated cross-member, located aft of the former unit, provides rear engine mount. In example, Ford transmission is used.

Bottom, double universal '37 Cadillac steering column is coupled to Ford steering gear on '50 Ford chassis. Note the exhaust header.

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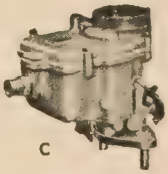

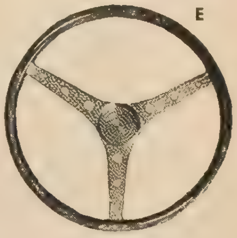

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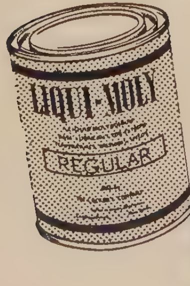

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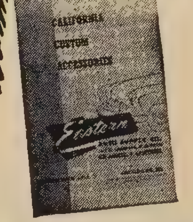

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At 123 Middle Neck Road, which is where Mill River is located, three consistencies of lubricants are available and, "regular," "concentrate", and "grease" are their designations. This seems to be the first successful method of employing molybdenum for commercial lubrication and the makers state that the product contains no oil, grease, graphite, or abrasive impurities, but the user may safely mix "Molly" with oil or grease and use it in an oil-can, spray-gun, grease-cup, or oil circulating system.

According to Mill River, the development has the interesting property of attaching itself to any metal surface it reaches thru molecular action, and it will stick regardless of speed, pressure, or temperature, thus forming a permanent lubricate which can only be removed by cutting or grinding.

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Stabilization temperature	77	88	(No reductions in temp. after rise)
Degrees-per-minute rise in temperature to peak	3.1	5.1	10.2 (avg. failure-temp. calc. as 225)
Degrees-per-minute rise in temp. during 1st hour or end of run if less)	1.2	3.4	4.6
Frictional drag on test apparatus	1 lb.	3 lb.	6 lb.

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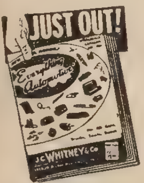

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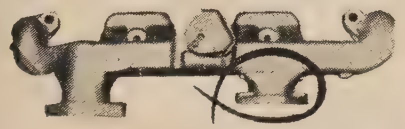
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GONZALEZ

(Continued from Salon)

Jose Gonzalez was born (29 years ago) in Arrecifes, a small town about 100 miles from Buenos Aires and which has a brilliant tradition in auto racing, having produced some of South America's best drivers. In the thoroly race-minded populace, Gonzalez was no exception. He made it his aim to someday be a race driver. Every circumstance about him fanned the flame of his early enthusiasm. Most important of all was his beloved uncle, Julio Perez, who was the idol of the city during the thirties. Uncle Julio's semi-stock records have made him one of the greatest Argentine aces of all time. Nephew Jose drove whenever he got a chance, in a strictly amateur way, always encouraged by the family and local tradition. He drove his first race in 1946, on a dirt oval in his home town. The car was a sleek single seater built by Viglione in 1934, which he bought and, after installing a '28 Chevrolet engine, won the first heat, but was forced out with engine trouble in the main event.

The young South American drove this car until '37 but never once finished in the money. His qualifying times were terrific but the car simply fell apart under the weight of his foot. His record of non-finishes would have discouraged anyone else, but he persisted and finally, in February '47 he astonished the "railbirds" by qualifying, *in the same car* for the Buenos Aires Grand Prix! His time was amazingly close to the specials in the unlimited class, tho his Chevrolet was running in the "small" class.

Encouraged by this feat, Gonzalez struck out for wider fields, with a different mount, the Chevrolet having been worn completely out. His "new" car was a four cylinder Ford. He campaigned the entire country in the 3.5 litre, stock, unblown category, which was limited to engines built not later than 1932. With this mount he piled up an impressive array of records and heat victories, but in the main events he still suffered from lead-foot trouble. The Ford continued to literally melt under his urging. He ventured into hi-way races for semi-stocks, but his record was nothing unusual. Obviously his forte was the earthen oval. He would press his Ford ruthlessly, to its very last gasp.

When the Ford blew up, as it most always did, Gonzalez was never content with retiring into the pits. He would work furiously until the last car had crossed the finish line, trying to get back into the race. More than once he was able to replace a connecting rod (with the help of his enthusiastic pit crew) or a broken axle and finish well up among the leaders. Needless to say, this persistence won the hearts of the crowd in spite of any arrogance they might sense in him. Before long he became known as "The Scourge of the Dirt" and he was given a wide birth by other drivers who formed the habit of getting out of his way. More than once he stepped out of the smaller classes and ran his Ford against the "free for all" larger entries. His fierce driving was spectacular, but it was the grim determination which eventually won him a bid from the Ferrari works team.

When it came time to defend Argentina's honor against the invasion from Europe of Mercedes, Gonzalez was already due to enter big time racing. He was thereby appointed a member of the local defending organization and was given a 1500 cc Maserati to drive during the 1949-50 season.

In the first event he blew up the engine; in the second the now-famous sunstroke put him out after the tail of his car had been amputated because it was dragging all over the course behind the car; at Mar del Plata, 6th place, and at Rosario, 7th.

Now came his big opportunity. He was named as the great Fangio's partner for European competition, and he made his farewell runs in the inaugural race at Mar del Plata's new speedway where he won his heat (in the old Ford) and at Le Cumbre, where he won the feature event.

In Europe during 1950, he managed to finish in the money only three times . . . Angouleme (3rd), Albi (2nd), and Zandvoort (7th). He blew up his car at Marseilles, Pau, San Remo, Roubiaux, Le Mans, Reims and at Geneva, while at Monaco his car was totally destroyed by fire. But he kept on driving—flat out as usual.

Back in Argentina again at the end of the season, he was runner-up to Fangio both at Parana and Chile, but in the Argentine 500 he blew up in one of the three leading Talbots.

In 1951 he definitely built himself into a full-fledged champion, winning both International Races in Buenos Aires (May *Road and Track*), and won at Rosario in Fangio's Wayne-Chevrolet.

Returning to Europe once again for the '51 season, Gonzalez rapidly caught the public fancy when he finished closely behind the great Farina in the G. P. de Paris, on a Talbot. Engine trouble again put him out while running second at Le Mans and out of the race altogether. His fortunes surged rapidly when he was hired by Ferrari and he accomplished the double defeat of his teacher Fangio and the unbeaten Alfa works team at Silverstone.

Today, Jose Gonzalez faces a brilliant career with the great Ferrari car. The crowd loves him and he is fully respected by drivers and technicians. "Hey, Gonzalez! You know what? You are the logical successor to Nuvolari!"

FORD-CONTINENTAL

(Continued from page 32)

condition. Cowl location is shown in the scale drawing and some ingenuity is required in adapting the '49 Ford body brackets to the Lincoln cowl.

Fenders shown are 1941 Studebaker Champion, tho models from 1939 thru 1946 are all very similar. These fenders are not only quite close to the Lincoln Continental style, but they are scaled down in keeping with the smaller overall size of our design. Front fenders can be supported by reworking the Studebaker sheet metal to fit the Ford frame, after first aligning the fenders in place with a jury rig. Be *sure* to align and locate to the *frame* and not to the ground! (This is a very common error) Rear fenders are located by using the adjacent body panels from the Stude and working to fit the Ford frame. If you want to forego the Continental trunk effect, you can use the entire rear end sections of the Champion, either from a sedan or a coupe, depending on where you want the rear roof line to end. The Continental rear sections can be used by "chopping" and welding in strips to fill in the gaps between the wheel house and the smaller Champ rear fenders.

The front hood can be made up in one of three ways, by (1) adding a section to the rear of the Stude hood, (2) shortening a Continental hood, and (3) hammering a new hood out of aluminum. Grille treatment shown is the usually preferred 1941 Lincoln type, notable for its simplicity.

Top treatment is up to you. The one shown is smaller than the Lincoln, to keep the car in good proportion. Assorted top bows are available from any large wrecking yard. There is room for occasional "opera seats' and still more room can be provided, if required, by redesigning the roof contours.

We asked for quotations on the C-F-C design from a reputable body builder . . . he will build up cars to this specification for $5000, little more than the last Continentals.

GERMAN G.P.

(Continued from page 5)

At the fifth lap Ascari (Ferrari) took over the lead, and the general opinion of the experts was that he was the best driver in the field, not only because of his tremendous speed, but because of his elegant style. He was followed then by Fangio, Gonzalez and Farina in that order. Gonzalez was unable to menace the leaders in this race because Nurburg requires not only great persistence and tremendous courage (he has both) but *perfect* driving style. He kept up a good position among the leading group in the earlier part of the race, but in the end he collapsed because he asked too much of himself. Consider his driving style: brute strength plays an important part; *he was unable at the end to open his painful hands!* When he shall clean up his driving style, this young and very heavy Argentinian will probably rank among the top Grand Prix drivers of all time. Even at that he finished third; a remarkable demonstration of stamina.

Farina who started 4th was seriously handicapped by his foot (which was seriously burned at Rheims). He is still the calm master of the controls.

In the center position the Simcas of Simon, Trintignant, and Manzon, were able to hold the big Talbots at bay. However, these little cars which have their engines stretched to the limit could not withstand such a hard race. At about 15 laps they began to disappear. Only Trintignant was left when Ascari's car was flagged in, but this Simca still had 7 laps to go to finish.

To return to the main contenders, Viloresi laid back in 5th place—evidently on orders—and watched Fangio and Farina carefully (the latter dropped out because of engine trouble). Because of Bonetta's ill-fated Alfa—an undiscoverable engine ailment—or because Pietsch was so far behind, there was not another car available for Farina. The result was that rival Fangio ran up more points toward the world's championship.

After Fangio retired, Villoresi automatically moved up to 4th, while the little Fischer on Ferrari (2560 cc), driving very carefully, began to move up and finally came in 6th to fill out the Ferrari complement.

Now pit stops changed the positions again, putting Gonzalez in the lead with Fangio 2nd. Even tho the positions changed back again, the crowd was under constant excitement. The fact that Ascari seemed certain to win did not dim their enthusiasm.

In the 13th lap the most dramatic event of the day happened. Pietsch in hot pursuit of Villoresi, saw him ahead and redoubled his efforts to catch the Ferrari. He gained until his Alfa was only 200 feet behind Villoresi, but on entering the curve at the dangerous descent of Adenau, he found himself traveling too fast! His Alfa went into a wild skid and was thrown outside the platform of earth and disappeared behind it. The spectators were terribly frightened until it was learned that the car landed on its wheels and very shortly was ready to run again.

On the 14th lap, Fangio came in for his second pit stop with Ascari already one second ahead. This appeared to settle the matter, and would have but for the fact that Ascari was seen to make an unexpected pit stop. And this incident shows how cool and calculating this Italian driver is. Knowing full well how cruel the Nurburg surface is to tires, Ascari preferred to lose 30 seconds in order to re-tire his rear wheels. Thus he would not have to worry in the last minutes of the race.

Thus Ascari won for the second time the German Grand Prix, altho Fangio hung up the fastest lap record (9 min. 55-8/10 sec.).

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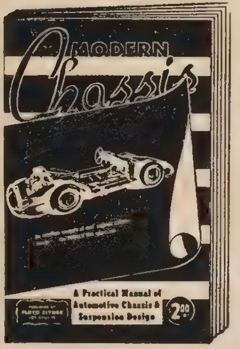
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GARDNER

(Continued from page 13)

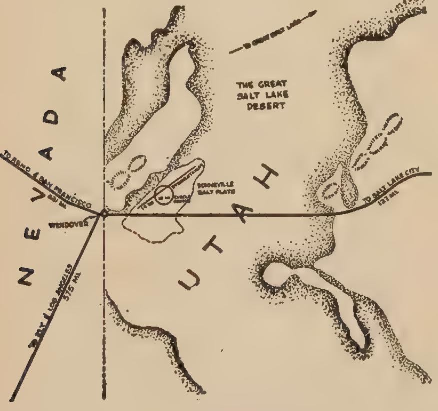
The man. . . .

Lt. Col. Alfred Thomas Goldie-Gardner, O.B.E., M.C., was born in Essex, England, in 1890. A perfect example of mature self-confidence, the Colonel is quiet, very modest, perfectly poised, extremely calm, and surprisingly friendly despite his reserve. He chews gum with a fascinating movement, talks like Winston Churchill, and is a "super" subject for the photographers. He's tall, 6′ 3″ on his "good side". The first half of his hyphenated name, which came from his Scottish mother (Clan MacIntosh), is usually used as a nickname by his associates.

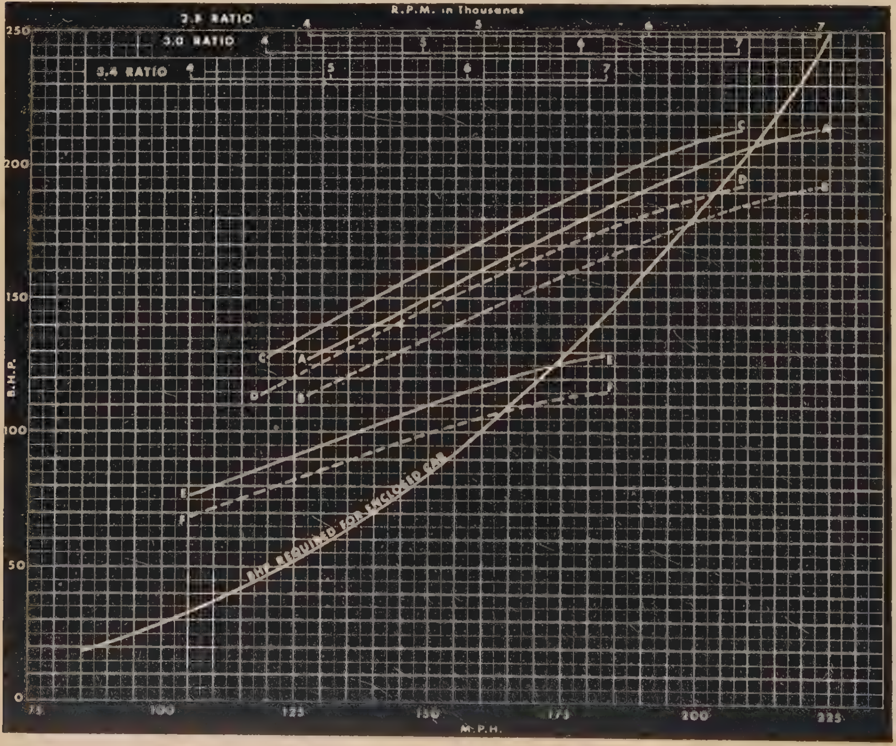
At home, "Goldie" is an automotive engineer and operates an Austin agency. He drives a Jaguar XK-120 and an Austin A-90 Saloon. Mrs. Gardner and a five year old daughter complete the family circle.

As a boy, Goldie was active in a wide range of sports. A leg injury in World War I . . . . he served in the 15th Scottish Regiment of the Royal Artillery and was decorated . . . . brought an end to athletic participation. Gardner turned to motor racing in 1924. His C-type MG set records at Brooklands. A track accident in 1932 (same leg) caused the Colonel's retirement from road racing, his efforts then being successfully devoted to record breaking.

In World War II, Col. Gardner again served in the Royal Artillery (as deputy chief instructor of mechanical traction, R.A. School) until his appointment on January 1944 as staff officer to Field Marshal Montgomery. . . . in this capacity he went over the Normandy beaches.



On chart below, A is high-boost engine at Abingdon 2.8 ratio, B is same as Bonneville, C is at Abingdon 3.0 ratio, D is same at Bonneville. E is low boost engine at Abingdon 3.4 ratio, F is same at Bonneville.



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At the war's concluson, the Colonel rebuilt the Ex. 135 and has bagged an impressive string of records in the 2-litre and under classes. (He is a small displacement fan is not interested in the larger classes.)

The crew . . .

Richard "Dick" Benn, M.B.,F.I.M.I., acts as manager for Col. Gardner on the record breaking exploits. His efficient handling of the many details attendant the runs allows Goldie to concentrate on driving problems. A Nuffield dealer (Brighton, England), Dick's personal car is a Shorrock-blown MG Saloon, which has been timed at 104 mph during the Brighton Speed Trials (where he annually serves as judge).

Albert Sydney Enever, Chief Planning Engineer for MG and Riley. "Syd" has been on the Gardner runs since 1938, having been responsible for the mechanical design, construction and preparation of the car. His service with M.G. began 24 years ago . . . was in charge of the Experimental Department prior to the war . . . did much of the TD and Mark II design. His MG racing experience dates to 1930 and the no muss, no fuss, no fiddling manner in which the runs are made is a tribute to Syd's MG know-how.

Reginald C. Jackson, Chief Inspector for MG and Riley, better known as "Jocko" Jackson has assisted Col. Gardner since 1936 and has been a mainstay of MG works racing activities since the early thirties, having joined the company in 1928. The Enever-Jackson combination has been unbeatable, as proven by the victories of their charges. Both men are reserved, capable, enthusiastic and experienced . . . if there's speed to be had from an MG, they will wring it out.

George Perry, Service Engineer for Joseph Lucas Ltd, has looked after ignition and electrical problems for Gardner on his last three runs. George stands by for Lucas at Grand Prix races, the T.T. and record runs. A most able technician, his lively personality keeps the crew in high spirits. His opinion of New York traffic was, "Coo, it's flippin' grim!"

The course . . .

Dead level, smooth as concrete, and stretching for miles in every direction . . . most ideal high-speed race track in the world . . . that's the Bonneville Salt Flats at Wendover, Utah. For Gardner's run, two courses were prepared, a circle of exactly 10 miles circumference and a 14-mile straightaway. Preparation consisted of dragging, to smooth off the small surface irregularities, and the painting of a broad black guide line. AAA's electronic timing was controlled from a central point with photo-electric cell relays at the necessary mile and kilometer points.

The "shores" of the salt flats are very mushy and automotive entry must be made at the entry gate; therefore, crowd control was very good—authorized personnel only being admitted. Utah Highway Patrol was on hand with walkie-talkies to assist officials.

(Continued on next page)

The runs . . .

After Goldie Gardner's famous MG was unloaded from the truck, we expected to see the usual routine of last minute tuning . . . but not this group of experts . . . tuning had been done on the dynamometer at Abington and everything was set to go. To everyone's surprise, this potent MG sounded like a cross between a Farmall tractor and a 4-cylinder Indian motorcycle.

Easing away from the starting line in second gear, the green MG was soon a speck in the distance. As Gardner approached his first lap, the exhaust note resembled a fast hydroplane . . . changed to that wonderful blown-MG blare as it flashed past . . . then became an odd guggle as it rapidly disappeared. The first lap was slow . . . Enever had given instructions to run at 5,700 rpm, but the tach was slow. "Faster" was signaled . . . 143 mph on lap eight. Meanwhile, oil temperature was up and fumes filled the cockpit. During the last lap, streamers of oil streaked the cowl and shortly after completing the hour mark, something "gave." Examination revealed that a fracture of the supercharger oil supply line at the valve cover had caused a loss of almost all oil. The fact that a separate oil tank keeps the crankcase full, saved the run.

While the "hi-boost" engine was being installed in Gardner's car, a stock MG Mark 2 TD established American Stock Car Records in Class F (1100 cc to 1500 cc) for distances and times up to 12 hours. Owned by the Salt Lake City Nuffield dealer, Foreign Motor Car Co., sponsored by Mobiloil and Motor Trend, and driven by Dick Van Osten, Swede Jensen, Bill Cramer and R. E. Petersen; it made a trouble-free run.

Col. Gardner has already told you of the AAA timing difficulties which prevented his attempts on the straightaway course. Despite around-the-clock efforts of the AAA personnel, nature and electronics conspired to spoil the opportunity. This aggravating and disappointing situation was taken by "Goldie" with admirable calm and acquiescence.

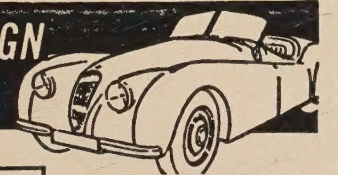
We hope to see Col. Gardner again next year.

International Class F (1500 cc)

50 km	127.8 mph	50 miles	130.6 mph
100 km	132 mph	100 miles	135.1 mph
200 km	136.4 mph	1 hour	137.4 mph

American National Records (Flying Start)

25 km	132.6 mph	25 miles	133.1 mph
50 km	133.4 mph	50 miles	134.7 mph
75 km	134.5 mph	75 miles	136.5 mph
100 km	135.8 mph	100 miles	137.6 mph
200 km	139.1 mph	1 hour	139.3 mph



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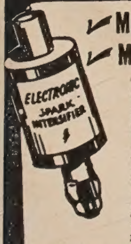

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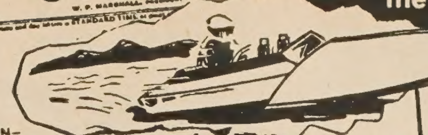

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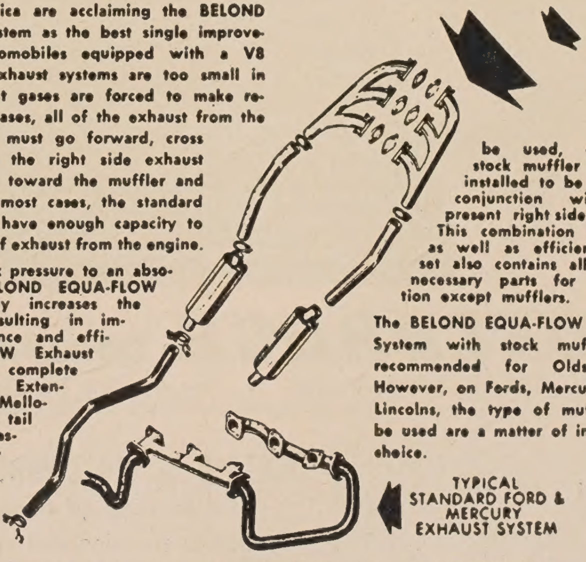

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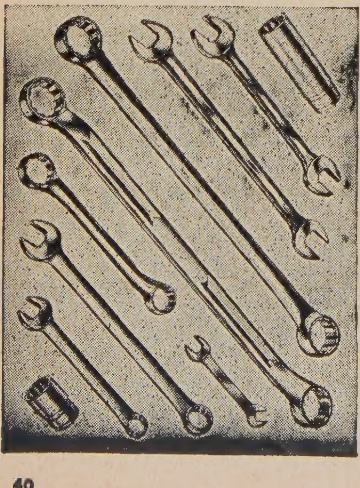

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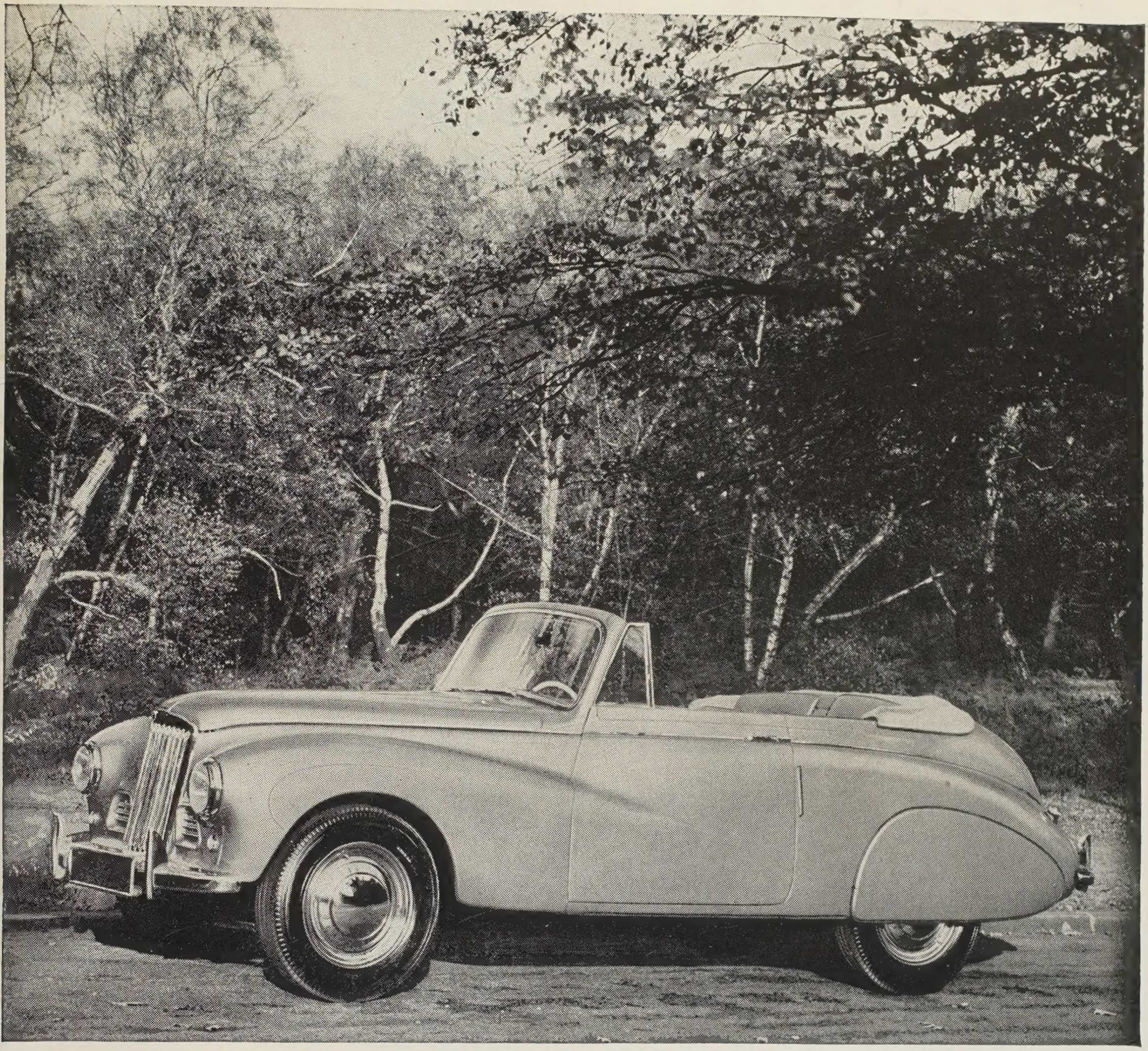

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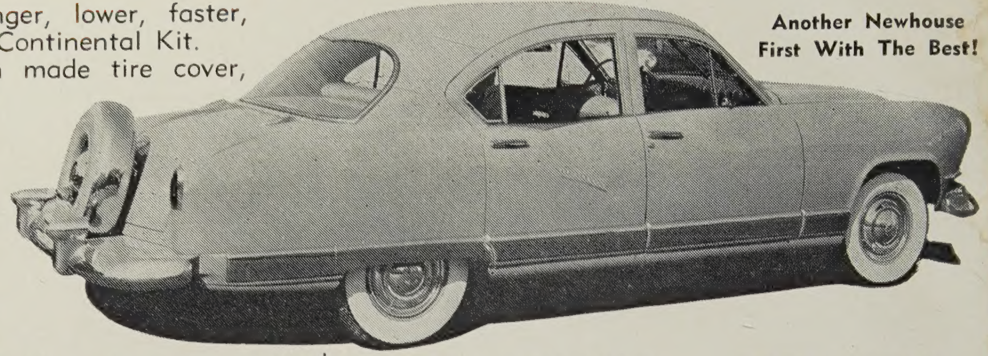

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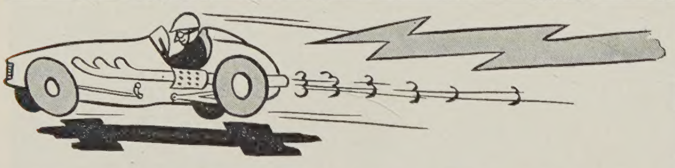

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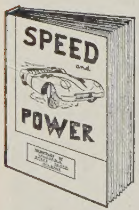

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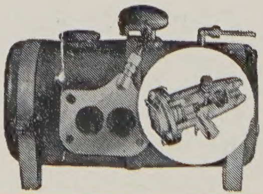

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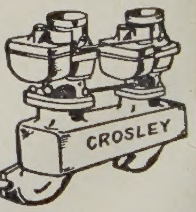

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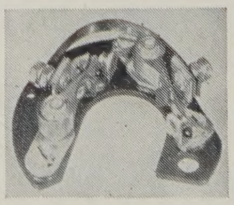

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